

2012-13 Course Descriptions

COURSE	TITLE	CREDIT HOURS	TEXT
ACCG100	Practical Accounting Non-Major	3	Students will learn the bookkeeping procedures necessary for preparation of financial statements and payroll. (F,Sp,Su). Prerequisite: Reading Level 4 and Math Level 4.
ACCG101	Accounting Info for Management	3	Students will learn to interpret financial statements and use this information for analysis, budgeting, and decision-making. (F,Sp). Prerequisite: Reading Level 4 and Math Level 4.
ACCG102	Special Topics in Accounting	1 to 4	This course explores current issues, knowledge, and skills relevant to the accounting profession. Specific topics vary by semester. Check the semester schedule book. (F,Sp,Su). Prerequisite: Determined by Section.
ACCG140	Income Tax Preparation	3	Students will complete individual income tax returns and supporting schedules according to the Internal Revenue Code. The focus is on the completion of forms rather than the theoretical aspects of the tax law. (F). Prerequisite: Reading Level 4 and Math Level 4.
ACCG160	Payroll Systems and Taxes	2	This course covers laws affecting payroll, calculation of payroll and payroll taxes using both manual and computer payroll systems, preparation of tax forms for payroll taxes, sales and use taxes, and personal property taxes. (F,Sp,Su). Prerequisite: Reading Level 4 and Math Level 4. Recommended: ACCG 100 or equivalent work experience.
ACCG161	Accounting with Quickbooks	2	Students will have hands-on experience in setting up an accounting system for a new or existing company using the QuickBooks general ledger accounting software. Students also will learn how to perform numerous types of accounting procedures using QuickBooks. (F,Sp,Su). Prerequisite: Reading Level 4 and Math Level 4. Recommended: ACCG 100 or equivalent course coursework or equivalent work experience.
ACCG210	Principles of Accounting I	4	Principles of Accounting I is the first class of a two-semester sequence focusing on financial accounting. The course includes accounting for service organizations and merchandisers, doing business as sole proprietorship, partnership or corporation. Topics covered include the basic accounting cycle, financial reporting, accounting theory, and accounting for inventories, cash, receivables and payables, plant assets, and stockholders equity. (F,Sp,Su). Prerequisite: Reading Level 5 and Math Level 4.
ACCG211	Principles of Accounting II	4	Principles of Accounting II is the second course in the two-semester accounting sequence. Topics include statement of cash flows, budgets and other managerial reports, capital budgeting, short-term decision-making, equity investments, time value of money, long-term liabilities, manufacturing accounting, job and process costing systems, and accounting for quality and cost management. (F,Sp,Su). Prerequisite: Minimum 2.0 in ACCG 210 and Reading Level 5 and Math Level 4. Recommended: Intermediate Algebra or higher. Course Note: An online course may require students to travel to an exam site for proctored exams. If you live at least 60 miles from LCC's Main Campus you may request to test at an approved proctored location (additional fees may apply). For additional information please visit https://www.lcc.edu/services/testing/
ACCG220	Intermediate Accounting I	4	Intermediate Accounting I is the first in a two-course sequence focusing on financial accounting and reporting, especially for publicly-traded corporations. Topics include the environment of financial accounting, accounting theory, financial statement preparation, time value of money concepts, and specific issues in accounting for current and long-term assets. (F,Sp). Prerequisite: Minimum 2.0 in ACCG 211 and Reading Level 5 and Math Level 4. Recommended: Electronic spreadsheet experience.
ACCG221	Intermediate Accounting II	4	Intermediate Accounting II is the second in a two-course sequence, focusing on financial accounting and reporting, especially for publicly-traded corporations. Topics include accounting for investments, liabilities, and shareholders' equity. In addition, the statement of cash flows and accounting changes and error correction are reviewed in depth. (F,Sp). Prerequisite: Minimum 2.0 in ACCG 220 and Reading Level 5 and Math Level 4. Recommended: Electronic spreadsheet experience.
ACCG230	Cost/Managerial I	4	This course focuses on accounting for manufacturing; cost-volume-profit analysis, responsibility accounting, decision models, activity based costing and activity based management. Other topics include: Just-In-Time inventory, absorption vs. variable costing, role-responsibility and professional ethics of the accountant. Computer applications are emphasized. (F,Sp). Prerequisite: Minimum 2.0 in ACCG 211 and Reading Level 5 and Math Level 4. Recommended: Electronic spreadsheet experience.
ACCG231	Cost/Managerial II	4	This course focuses on decision-making through control and management of information flow; activity based costing, activity based management; Just-In-Time and other inventory management tools. Other topics include: pricing; cost allocation; sales variances; management control systems; management performance measurement systems; transfer pricing and multi-nationals. Computer applications are emphasized. (Su). Prerequisite: Minimum 2.0 in ACCG 230 and Reading Level 5 and Math Level 4. Recommended: Electronic spreadsheet experience.

COURSE	TITLE	CREDIT HOURS	TEXT
ACCG240	Federal Income Tax I	4	This class is the first in a two-semester sequence in federal income tax. This course deals with taxation of individuals from a historical and theoretical perspective, as well as preparation of individual income tax returns under current tax law. (F,Sp). Prerequisite: Minimum 2.0 in ACCG 210 and Reading Level 5 and Math Level 4.
ACCG241	Federal Income Tax II	4	This class is the second in a two-semester sequence in federal income tax. This course deals with the taxation of corporations, s-corporations, LLC's, partnerships, estates, and trusts from a historical and theoretical perspective, and as well as preparation of tax and information returns under current tax law. (F,Sp). Prerequisite: Minimum 2.0 in ACCG 240 and Reading Level 5 and Math Level 4.
ACCG245	Accounting Internship	2	This course provides an opportunity to apply classroom learning to a career-related position by working a minimum of 128 hours at an approved work site. A student may do an internship at his/her own job only if the duties are new, accounting related, and provide an appropriate learning situation. (F,Sp,Su). Prerequisite: Department Approval. Recommended: Minimum of 8 upper level ACCG credits.
ACCG250	Advanced Accounting	4	This course covers business consolidations, foreign currency accounting, and partnerships. In addition, the course provides an overview of governmental and nonprofit accounting. (F). Prerequisite: Minimum 2.0 in ACCG 221 and Reading Level 5 and Math Level 4.
ACCG260	Accounting Systems	4	Accounting Systems prepares students to work with and design information systems. Students analyze systems, work with computerized accounting systems, database design, and problem solving with spreadsheets. (F,Sp). Prerequisite: Minimum 2.0 in ACCG 211 and Reading Level 5 and Math Level 4. Recommended: Keyboarding experience.
ACCG266	Independent Study Accounting	1 to 4	With this course, students will learn accounting topics currently not included in existing courses. It is expected that the student will spend approximately 48 hours per credit. (F,Sp,Su). Prerequisite: Department Approval.
ACCG271	Principles of Finance	3	This course emphasizes the short- and long-term decisions a financial manager may face. Topics include working capital management, risk, cost of capital, capital markets, long-term debt, stocks and dividend policy, mergers and acquisitions, and international financial markets as these topics relate to obtaining financing for a business. (Su). Prerequisite: Minimum 2.0 in ACCG 211 and Reading Level 5 and Math Level 4.
ACCG280	Governmental Accounting	4	Applications of fund accounting principles are applied to governmental (local and state) and not-for-profit entities. Students learn skills necessary to understand the organization, accounting functions, auditing, and financial reporting practices of governmental and non profit organizations. Governmental Accounting Standards Board (GASB) and Financial Accounting Standards Board (FASB) requirements are taught. (F, Sp). Prerequisite: Minimum 2.0 in ACCG 211 and Reading Level 5 and Math Level 4.
ACCG290	Auditing	4	Students will primarily learn about the audit of historical financial statements as performed by certified public accounting firms. Material covered on the CPA exam will be emphasized. (F, Sp). Prerequisite: Minimum 2.0 in ACCG 221 or concurrently and Reading Level 5 and Math Level 4.
ACCG292	Fraud Detection and Prevention	3	Fraud examination will cover the principles and methodology of fraud detection and deterrents. The course will include the how and why of fraud, recognizing symptoms and positive detection methods, fundamentals of conducting a fraud investigation, fraud in the management ranks, and methods of resolution. (F,Sp,Su). Prerequisite: Minimum 2.0 in ACCG 211 or concurrently and Reading Level 5 and Writing Level 4.
AEET102	Prin of Altern/Renew Energies	4	This course will cover basic principles and history of alternative energy sources. Industry and government status of geothermal, wind, solar, biomass, fuel cells and other energy sources will be highlighted. Alternative and traditional energies will be defined and compared in terms of today's use. The evolving energy career areas will be discussed. (F,Sp,Su). Prerequisite: Reading Level 3 and Writing Level 4 and Math Level 3.
AEET120	Residential Energy	3	The focus of this course will be on the history of traditional energy sources and reasons why government, business, and industry are turning to alternative and renewable energy sources. Topics include how to reduce fossil fuel usage and how to convert from traditional energy sources to alternative and renewable energy sources. (F,Sp,Su). Prerequisite: Minimum 2.0 in ARCH 125 and Reading Level 3 and Writing Level 4 and Math Level 4.
AEET175	Special Topics/Altern Energy	.25 to 8	This course offers students the opportunity to learn new or advanced skills in Alternative Energy Engineering Technology and other related topics. Specific content may vary with each offering and will be related to the Alternative Energy Engineering Technology Program and profession. (F,Sp,Su). Prerequisite: Determined by Section.

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AEET215	Geothermal Technology	3	This course will cover the basics of geothermal energy production and technology. Essentials on how to utilize and integrate geothermal technology as an energy source will be analyzed and demonstrated. Examples of residential and commercial applications will be shown and reviewed. (F). Prerequisite: Reading Level 3 and Writing Level 4.
AEET216	Solar Energy Technologies	3	This course will cover the basics of solar energy generation including energy collection and storage. Solar power ranging from the heat of the day to solar electric conversion technologies will be covered including Solar Electric (Photovoltaic); Thermal; and Heating, Cooling and Lighting (Active and Passive). A brief history of solar powered energies will be included. (F,Sp). Prerequisite: Reading Level 3 and Writing Level 4 and Math Level 4.
AEET217	Bio-Energy	3	This course will focus on the release of chemical energy by accelerating the naturally occurring carbon dioxide cycle and the use of this energy to power engines and generators. Natural fuels and fuels made from plant materials and garbage will be discussed. Engine efficiency and its impact on lower emissions will also be discussed. (F,Sp). Prerequisite: Reading Level 3 and Writing Level 4 and Math Level 4.
AEET218	Fuel Cell & Hydrogen Tech	3	This course will focus on fuel cell conversion devices and other hydrogen based technologies. The history of hydrogen and fuel cell technologies, their application, instrumentation, specifications, codes, system designs and materials will be covered. Basic thermodynamics and heat/mass transfer technology will be discussed. Specific licensing, permits, and safety issues will be covered. (F). Prerequisite: Reading Level 3 and Writing Level 4 and Math Level 4. Recommended: CHEM 135 or concurrently.
AEET219	Wind Energies	3	This course will cover the use of naturally occurring winds to create electricity. Wind farms, collection devices and current status of wind energy will be discussed. Horizontal Axis and Vertical Axis Turbine systems will be covered. A brief history of wind energy will be included. (F,Sp). Prerequisite: Reading Level 3 and Writing Level 4 and Math Level 4.
AEET220	Energy Modeling	2	This course focuses on learning energy management software. This includes energy modeling software, building simulations, spreadsheets, data logging interfaces, and proprietary energy system software. Students will learn to analyze the data in the software and compare it to baseline measurements in other scenarios, documented system performance, and expected financial impacts. (F, Sp). Prerequisite: Minimum 2.0 in AEET 120 and Reading Level 4 and Writing Level 4 and Math Level 5.
AEET226	Applied Solar Photovoltaics	3	This course expands on and applies the concepts and principles from AEET 216. Photovoltaic (PV) systems are sized, designed, configured, procured, built, tested and maintained. This course will help the student prepare for the NABCEP Basic PV Certification Exam. (Sp). Prerequisite: Minimum 2.5 in AEET 216 and (minimum 2.0 in ELTE 102 or HVAC 102 or METS 102 or WELD 102 or concurrently) and Reading Level 3 and Writing Level 4 and Math Level 4. Recommended: AEET 102 and Basic Computer Skills
AEET251	Commercial Energy Systems	4	This course analyzes energy systems, applications, and integration into the building system. Analysis will be project-based where students take part in real world implementations based on energy audits. The course explores financial models to determine payback periods, true cost comparisons, and life cycle costing of energy solutions. (F, Sp). Prerequisite: Minimum 2.0 in (AEET 220 or concurrently) and Reading Level 5 and Writing Level 6 and Math Level 5. Recommended: Minimum 2.0 in AEET 102.
AEET256	Building Commissioning	4	Students learn the step-by-step processes used to perform building commissioning, retro-commissioning, and continuous commissioning. Students will implement software programs, data analysis, and recording techniques to track system energy use. Students compare design documents from building construction or energy system installation with actual performance data. (F, Sp). Prerequisite: Minimum 2.0 in AEET 251 and Reading Level 5 and Writing Level 6 and Math Level 5.
AEET261	Codes, Regulations & Standards	4	This course covers the codes, regulations and standards that are currently in place for building efficiency, energy auditing, and commissioning standards. Evaluation of a building and the energy efficient materials used in construction in terms of impacts on codes is addressed. Students analyze building projects and identify code related issues. (F, Sp). Prerequisite: Reading Level 5.
AEET275	Sustainable Building Design	4	This course is a capstone project lab that offers students the opportunity to apply advanced skills in sustainable energy efficient architectural design and building science at a project construction site. The course will incorporate concepts that were acquired in prior coursework. Specific content may vary based on project specific requirements. (F, Sp, Su). Prerequisite: Department Approval.
AEET280	Alternative Energy Practicum	4	Special research projects and/or individual readings are used to apply personal and professional experience to the academic area of interest. Each accepted student will submit a plan that will be approved by the program advisor. The completion of a written project report is required. (F, Sp, Su). Prerequisite: Department Approval.

COURSE	TITLE	CREDIT HOURS	TEXT
AERO110	Foundation of the USAF I-Lab	1	This Lab course augments AFROTC academic curriculum by providing prospective Air Force officers the opportunities and feedback needed to develop the leadership, managerial and supervisory skills required of successful Air Force officers. Physical Training (PT) enhances fitness levels of cadets and prepares them to meet AFROTC and Air Force standards, while motivating cadets to pursue a physically fit and active lifestyle. Attendance is mandatory except as arranged with the Operations Flight Commander, through the cadet wing chain of command. (F). Prerequisite: None. Course Note: Call Aerospace Studies at MSU at (517) 355-2168 for specific days and times.
AERO111	Foundation of the USAF I	1	This course provides an introduction to the U.S. Air Force today. Course topics include mission and organization, group leadership problems, and introduction to communication skills. Includes a leadership laboratory. (F). Prerequisite: None. Course Note: Call Aerospace Studies at MSU, (517) 355-2168, for specific days and times.
AERO112	Foundation of the USAF II	1	This course provides an introduction to the U.S. Air Force today. Course topics include officership and professionalism, group leadership problems, and introduction to communication skills. Includes a leadership laboratory. (Sp). Prerequisite: None. Course Note: Call Aerospace Studies at MSU, (517) 355-2168, for specific days and times.
AERO113	Foundation of the USAF II-Lab	1	This lab course augments AFROTC academic curriculum by providing prospective Air Force officers the opportunities and feedback needed to develop the leadership, managerial and supervisory skills required of successful Air Force officers. Physical Training (PT) enhances fitness levels of cadets and prepares them to meet AFROTC and Air Force standards, while motivating cadets to pursue a physically fit and active lifestyle. Attendance is mandatory except as arranged with the Operations Flight Commander, through the cadet wing chain of command. (Sp). Prerequisite: None. Course Note: Call Aerospace Studies at MSU at (517) 355-2168 for specific days and times.
AERO210	Evolution of USAF I-Lab	1	This lab course augments AFROTC academic curriculum by providing prospective Air Force officers the opportunities and feedback needed to develop the leadership, managerial and supervisory skills required of successful Air Force officers. Physical Training (PT) enhances fitness levels of cadets and prepares them to meet AFROTC and Air Force standards, while motivating cadets to pursue a physically fit and active lifestyle. Attendance is mandatory except as arranged with the Operations Flight Commander, through the cadet wing chain of command. (F). Prerequisite: None. Course Note: Call Aerospace Studies at MSU at (517) 355-2168 for specific days and times
AERO211	Evolution of USAF I	1	This course focuses on Air Force heritage. Course topics include evaluation of air power concepts and doctrine, introduction to ethics and values, introduction to leadership, and the continuing application of communication skills. Includes a leadership laboratory. (F). Prerequisite: None. Course Note: Call Aerospace Studies at MSU, (517) 355-2168, for specific days and times.
AERO212	Evolution of USAF II	1	Course topics include the role of technology in the growth of air power, group leadership problems, and the continuing application of communication skills. Includes a leadership laboratory. (Sp). Prerequisite: None. Course Note: Call Aerospace Studies at MSU, (517) 355-2168, for specific days and times.
AERO213	Evolution of USAF II-Lab	1	This lab course augments AFROTC academic curriculum by providing prospective Air Force officers the opportunities and feedback needed to develop the leadership, managerial and supervisory skills required of successful Air Force officers. Physical Training (PT) enhances fitness levels of cadets and prepares them to meet AFROTC and Air Force standards, while motivating cadets to pursue a physically fit and active lifestyle. Attendance is mandatory except as arranged with the Operations Flight Commander, through the cadet wing chain of command. (Sp). Prerequisite: None. Course Note: Call Aerospace Studies at MSU at (517) 355-2168 for specific days and times.
ANTH270	Cultural Anthropology	3	This course compares ways of life for societies worldwide using anthropological theory and methodology. Basic institutions of pre-industrial society, such as kinship, religion, law, politics, and economics are examined to provide a better understanding of the diversity of contemporary societies. Cultural variations and the role culture plays in adapting to the environment is emphasized. (F,Sp,Su). Prerequisite: Reading Level 5 and Writing Level 6.
ANTH271	Medical Anthropology	3	Medical Anthropology examines the connections between culture and health and illness. The course focuses on contemporary and alternative medicine, including traditional and native healing; and disease patterns in different cultures. A cross-cultural perspective that is invaluable in working with the health of diverse populations is explored. (F). Prerequisite: Reading Level 5 and Writing Level 6.

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ANTH275	Physical Anthro & Archaeology	4	An overview of human biological and cultural evolution as evidenced in fossil records. Mechanisms of evolution and cultural adaptation will be traced from pre-historic origins through the development of modern homo sapiens. Major theoretical approaches and methodologies within the subdisciplines of anthropology will be incorporated. (F). Prerequisite: Reading Level 5 and Writing Level 6. Recommended: SOCL 120 and (BIOL 145 or BIOL 201 or High School Biology).
ANTH276	World Archaeology	3	A general survey of archaeology. Includes an overview of the history of the field and the basic theories and methods employed in the study of prehistoric and historic cultures. Archaeological data and sites are used to explain the extinction and continuation of human societies. (Sp). Prerequisite: Reading Level 5 and Writing Level 6. Recommended: ANTH 270 and/or SOCL 120.
APPR120	Electrical Apprenticeship	4	DESCRIPTION MISSING FROM UNofficial syllabus (F,Sp,Su). Prerequisite: Current Electrical Apprentice.
APPR140	Painter/Decorator Apprentice	3	Must be a painter/decorator apprentice indentured to the Lansing Painters and Decorators Joint Apprenticeship Training Committee. Content covered includes trade techniques, color mixing and matching, mathematics related to the trade, estimating and paperhanging. (F,Sp). Prerequisite: Current Decorator or Painter Apprentice.
APPR151	Plumber's Upgrade: 2 Credits	2	This course will prepare the indentured plumber/pipefitter apprentice and/or journeyman for certification in a variety of disciplines, as well as upgrades on new codes and procedures. (F,Sp,Su). Prerequisite: Current Plumber or Pipefitter Apprentice or Plumber or Pipefitter Journeyman License.
APPR152	Plumber's Upgrade: 3 Credits	3	This course will prepare the indentured plumber/pipefitter apprentice and/or journeyman for certification in a variety of disciplines, as well as upgrades on new codes and procedures. (F,Sp,Su). Prerequisite: Current Plumber or Pipefitter Apprentice or Plumber or Pipefitter Journeyman License.
APPR153	Plumber's Upgrade: 4 Credits	4	This course will prepare the indentured plumber/pipefitter apprentice and/or journeyman for certification in a variety of disciplines, as well as upgrades on new codes and procedures. (F,Sp,Su). Prerequisite: Current Plumber or Pipefitter Apprentice or Plumber or Pipefitter Journeyman License.
APPR154	Plumber's Upgrade: 1 Credit	1	This course will prepare the indentured plumber/pipefitter apprentice and/or journeyman for certification in a variety of disciplines, as well as upgrades on new codes and procedures. (F,Sp). Prerequisite: Current Plumber or Pipefitter Apprentice or Plumber or Pipefitter Journeyman License.
APPR155	Plumber/Pipefitter Appren 1-A	3	Must be a plumber/pipefitter apprentice indentured to the Lansing Area Joint Plumbing and Pipefitting Apprenticeship Fund. This is the first course of fifteen in the Plumbers/Pipefitters Apprenticeship five-year program. Content covered includes mathematics, trade heritage, use and care of tools and materials specific to the industry, job safety, oxyacetylene cut and weld process, physics, basic steel layout and fabrication, and job analysis. (F,Sp,Su). Prerequisite: Current Plumber or Pipefitter Apprentice.
APPR156	Plumber/Pipefitter Appren 1-B	3	Must be a plumber/pipefitter apprentice indentured to the Lansing Area Joint Plumbing and Pipefitting Apprenticeship Fund. This is the second course of the Plumbers/Pipefitters Apprenticeship five-year program. Content covered includes mathematics, blueprint interpretation, shielded metal arc weld process, physics, basic rigging, pipe layout and fabrication, and job analysis. (F,Sp,Su). Prerequisite: Current Plumber or Pipefitter Apprentice.
APPR157	Plumber/Pipefitter Appren 1-C	3	Must be a plumber/pipefitter apprentice indentured to the Lansing Area Joint Plumbing and Pipefitting Apprenticeship Fund. This is the third course of the Plumbers/Pipefitters Apprenticeship five-year program. Content covered includes mathematics, blueprint interpretation, basic isometric drawing, shielded metal arc weld process, rigging, pipe layout and fabrication, soldering and brazing, valve identification and selection and job analysis. (F,Sp,Su). Prerequisite: Current Plumber or Pipefitter Apprentice.
APPR158	Plumber/Pipefitter Appren 2-A	3	Must be a plumber/pipefitter apprentice indentured to the Lansing Area Joint Plumbing and Pipefitting Apprenticeship Fund. This is the fourth course of the Plumbers/Pipefitters Apprenticeship five-year program. Content covered includes trade mathematics, blueprint interpretation, isometric drawing, introduction to pipe welding, equipment rigging, pipe layout and fabrication, soldering and brazing and job analysis. (F,Sp,Su). Prerequisite: Current Plumber or Pipefitter Apprentice.
APPR159	Plumber/Pipefitter Appren 2-B	3	Must be a plumber/pipefitter apprentice indentured to the Lansing Area Joint Plumbing and Pipefitting Apprenticeship Fund. This is the fifth course of the Plumbers/Pipefitters Apprenticeship five-year program. Content covered includes advanced mathematics, blueprint interpretation, isometric drawing, pipe welding, advanced rigging, pipe layout and fabrication, valve installation and repair and job analysis. (F,Sp,Su). Prerequisite: Current Plumber or Pipefitter Apprentice.

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APPR160	Plumber/Pipefitter Appren 2-C	3	Must be a plumber/pipefitter apprentice indentured to the Lansing Area Joint Plumbing and Pipefitting Apprenticeship Fund. This is the sixth course of the Plumbers/Pipefitters Apprenticeship five-year program. Content covered includes advanced trigonometry, advanced isometric drawing, pipe welding, advanced rigging, pipe layout and fabrication, valve repair, transit level and job analysis. (F,Sp,Su). Prerequisite: Current Plumber or Pipefitter Apprentice.
APPR161	Plumber/Pipefitter Appren 3-A	3	Must be a plumber/pipefitter apprentice indentured to the Lansing Area Joint Plumbing and Pipefitting Apprenticeship Fund. This is the seventh course of the Plumbers/Pipefitters Apprenticeship five-year program. Content covered includes trade related science, advanced isometric drawing, systems drainage, plumbing fixtures and an introduction to plumbing code. (F,Sp,Su). Prerequisite: Current Plumber or Pipefitter Apprentice.
APPR162	Plumber/Pipefitter Appren 3-B	3	Must be a plumber/pipefitter apprentice indentured to the Lansing Area Joint Plumbing and Pipefitting Apprenticeship Fund. This is the seventh course of the Plumbers/Pipefitters Apprenticeship five-year program. Content covered includes trade related science, advanced isometric drawing, potable water supply and distribution, plumbing fixtures, and an introduction to plumbing codes. (F,Sp,Su). Prerequisite: Current Plumber or Pipefitter Apprentice.
APPR163	Plumber/Pipefitter Appren 3-C	3	Must be a plumber/pipefitter apprentice indentured to the Lansing Area Joint Plumbing and Pipefitting Apprenticeship Fund. This is the ninth course of the Plumbers/Pipefitters Apprenticeship five-year program. Content covered includes advanced isometric interpretation and preparation for the State of Michigan Journey Plumber's License. (F,Sp,Su). Prerequisite: Current Plumber or Pipefitter Apprentice.
APPR164	Plumber/Pipefitter Appren 4-A	3	Must be a plumber/pipefitter apprentice indentured to the Lansing Area Joint Plumbing and Pipefitting Apprenticeship Fund. This is the tenth course of the Plumbers/Pipefitters Apprenticeship five-year program. Content covered includes State of Michigan Cross Connection Control Certification, Medical Gas Installer/Brazer Certification. (F,Sp,Su). Prerequisite: Current Plumber or Pipefitter Apprentice.
APPR165	Plumber/Pipefitter Appren 4-B	3	Must be a plumber/pipefitter apprentice indentured to the Lansing Area Joint Plumbing and Pipefitting Apprenticeship Fund. This is the eleventh course of the Plumbers/Pipefitters Apprenticeship five-year program. Content covered includes steam science and technology, steam boilers and distribution piping, advanced blueprint interpretation and steam piping fabrication. (F,Sp,Su). Prerequisite: Current Plumber or Pipefitter Apprentice.
APPR166	Plumber/Pipefitter Appren 4-C	3	Must be a plumber/pipefitter apprentice indentured to the Lansing Area Joint Plumbing and Pipefitting Apprenticeship Fund. This is the twelfth course of the Plumbers/Pipefitters Apprenticeship five-year program. Content covered includes combustion gas appliance installation and piping, gas valves and regulators, electrical systems, appliance controls, and the Gas Tungsten Arc Welding process. (F,Sp,Su). Prerequisite: Current Plumber or Pipefitter Apprentice.
APPR167	Plumber/Pipefitter Appren 5-A	3	Must be a plumber/pipefitter apprentice indentured to the Lansing Area Joint Plumbing and Pipefitting Apprenticeship Fund. This is the thirteenth course of the Plumbers/Pipefitters Apprenticeship five-year program. Content covered includes principles of hydronic heating and cooling systems, hydronic boilers, pumps, controls and advanced tungsten arc welding. (F,Sp,Su). Prerequisite: Current Plumber or Pipefitter Apprentice.
APPR168	Plumber/Pipefitter Appren 5-B	3	Must be a plumber/pipefitter apprentice indentured to the Lansing Area Joint Plumbing and Pipefitting Apprenticeship Fund. This is the fourteenth course of the Plumbers/Pipefitters Apprenticeship five-year program. Content covered includes principles of air conditioning and refrigeration, and UA Welding Certification preparation. (F,Sp,Su). Prerequisite: Current Plumber or Pipefitter Apprentice.
APPR169	Plumber/Pipefitter Appren 5-C	3	Must be a plumber/pipefitter apprentice indentured to the Lansing Area Joint Plumbing and Pipefitting Apprenticeship Fund. This is the final course of the Plumbers/Pipefitters Apprenticeship five-year program. Content covered includes UA Welding Certification preparation and a review of the five-year material in preparation for the final exam. (F,Sp,Su). Prerequisite: Current Plumber or Pipefitter Apprentice.
APPR170	Inside Wireman Apprentice 1-A	4	First of fifteen courses specifically for IBEW/JATC apprentices. Basic electrical safety, using state/federal standards/practices, in the home, electrical laboratory, and in construction and industry are covered. The installation of various wiring systems in wood frame and masonry construction, nonmetallic-sheathed cable, electrical metallic tubing, flexible metal and rigid conduit are also covered. (F,Sp,Su). Prerequisite: Current IBEW Electrical Apprentice.

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APPR171	Inside Wireman Apprentice 1-B	4	Introduces IBEW/JATC apprentices to practical level electricity, use of meters to measure quantities, basic circuit calculations, basic household wiring installation, motor and transformer behavior investigation. Concepts in basic and vector algebra, and trigonometry to solve DC electric circuit problems, including units, Ohm's law, network analysis, series parallel and combination DC circuits inductance and capacitance, and a review of codes/standards will be covered. (F,Sp,Su). Prerequisite: Current IBEW Electrical Apprentice.
APPR172	Inside Wireman Apprentice 1-C	4	Basic electrical safety practices, including state/federal standards/practices, in the home, laboratory and within construction and industry, construction and interpretation of prints emphasizing standard/nonstandard symbols are covered. Calculations of branch circuits, feeders, motor circuits and service sizes using the National Electrical Code. Uninterruptible power supplies, signaling and safety systems are also covered. (F,Sp,Su). Prerequisite: Current IBEW Electrical Apprentice.
APPR173	Inside Wireman Apprentice 2-A	4	Structure and scope of the National Electrical Code, including how to locate Ohm's law, voltage drop, wire and conduit sizing and installation method code sections. Utilizes basic and vector algebra and trigonometry concepts to solve AC electric circuit problems. Network analysis, series parallel and combination AC circuits, inductance and capacitance are covered. (F,Sp,Su). Prerequisite: Current IBEW Electrical Apprentice.
APPR174	Inside Wireman Apprentice 2-B	4	Students will study the installation of nonmetallic sheathed cable, flexible metal conduit, electrical metallic tubing and rigid conduit. This is a practical introduction to AC theory. (F,Sp,Su). Prerequisite: Current IBEW Electrical Apprentice.
APPR175	Inside Wireman Apprentice 2-C	4	Practical introduction to single- and three-phase transformers, motors and alternators. Construction and interpretation of prints emphasizing standard/nonstandard symbols. National Electrical Code and State of Michigan rules are reviewed. (F,Sp,Su). Prerequisite: Current IBEW Electrical Apprentice.
APPR176	Inside Wireman Apprentice 3-A	4	This course introduces the student to solid-state circuitry used in industry. Students will study diodes, transistors, SCRs, triacs, optical isolators, transducers, power circuits, etc. Laboratory will include oscilloscope usage. The course also includes an introduction to Boolean algebra and digital circuits. (F,Sp,Su). Prerequisite: Current IBEW Electrical Apprentice.
APPR177	Inside Wireman Apprentice 3-B	4	Introduction to Boolean algebra, digital circuits and solid-state circuitry used in industry. Diodes, transistors, SCRs triacs, optical isolators, transducers, power circuits, oscilloscopes etc. are studied and used. Installation of nonmetallic sheathed cable, flexible metal conduit, electrical metallic tubing and rigid conduit are practiced. (F,Sp,Su). Prerequisite: Current IBEW Electrical Apprentice.
APPR178	Inside Wireman Apprentice 3-C	4	Interpretation and construction of prints emphasizing standard/nonstandard symbols. Calculate branch circuit, feeder, motor circuit, and service sizes using the National Electrical Code. Review of the National Electrical Code with focus on location and interpretation. Uninterruptible power supplies, signaling, safety systems and State of Michigan electrical rules are also reviewed. (F,Sp,Su). Prerequisite: Current IBEW Electrical Apprentice.
APPR179	Inside Wireman Apprentice 4-A	4	Relay logic and controls using industrial standards are covered. Use of correct symbols and standard construction of wiring and ladder diagrams is emphasized. Students will wire three-phase motor control circuits utilizing two- and three-wire control, and machine control circuits utilizing limit and proximity switches, timers, relays, etc. (F,Sp,Su). Prerequisite: Current IBEW Electrical Apprentice.
APPR180	Inside Wireman Apprentice 4-B	4	Covers relay logic and controls using industrial standards. Use of correct symbols and standard construction of wiring and ladder diagrams is emphasized. Wiring three-phase motor control circuits utilizing two- and three-wire control and machine control circuits utilizing limit and proximity switches, timers, relays, etc. are covered. (F,Sp,Su). Prerequisite: Current IBEW Electrical Apprentice.
APPR181	Inside Wireman Apprentice 4-C	4	Construction and interpretation of prints emphasizing standard/nonstandard symbols. State of Michigan electrical rules and National Electrical Code (NEC) review focusing on locating and interpreting codes. Use of the index method to discuss interpretation of the NEC to calculate branch circuit, feeder, motor circuit and service sizes. Uninterruptible power supplies, signaling and safety systems are covered. (F,Sp,Su). Prerequisite: Current IBEW Electrical Apprentice.
APPR182	Inside Wireman Apprentice 5-A	4	This course covers various code calculations using the NEC and state electrical code in preparation for the State of Michigan journeyman's exam. (F,Sp,Su). Prerequisite: Current IBEW Electrical Apprentice.

COURSE	TITLE	CREDIT HOURS	TEXT
APPR183	Inside Wireman Apprentice 5-B	4	For apprentices with field experience and basic electrical training. Covers security and fire alarm systems, sensors, instrumentation setup and calibration, theory of flow, pressure level, temperature, pneumatics, telephone wiring, high voltage safety and testing, heating, ventilating, air conditioning (HVAC) theory, programmable controllers, controls and troubleshooting, and uninterruptible power supplies. (F,Sp,Su). Prerequisite: Current IBEW Electrical Apprentice.
APPR184	Inside Wireman Apprentice 5-C	4	Covers programmable logic controllers with focus on common operating principles. Includes capabilities, similarities, and differences among controllers, programming (examine on/off, timers and counters) and connecting external devices to Allen-Bradley and Modicon. Includes review of the National Electrical Code and the State of Michigan electrical rules. (F,Sp,Su). Prerequisite: Current IBEW Electrical Apprentice.
APPR220	Special Topics/Electricians	.25 to 8	This course offers apprentice and journey electricians the opportunity to learn new or advanced skills in the commercial and residential electrical industry and other related topics. Specific content may vary with each offering and will be related to the electrical profession. (F,Sp,Su). Prerequisite: Apprentice or Journey Electrician.
APPR225	Fire Alarms	3	Covers fire alarm systems, circuits, fundamentals, installation practices, interfaced systems, supervising stations, system requirements, testing and maintenance, dwellings, basic troubleshooting, related code requirements (NEC and the National Fire Alarm Code), and NICET testing preparation. Upon successful completion, students will be prepared to take the NICET Level II Fire Alarm Technician Examination. (F,Sp,Su). Prerequisite: Current IBEW Apprentice or Journeyman.
APPR227	Supervisor Training	4	This course will offer students practical advice about how to handle real-life, on-the-job situations. Students will take on the role of a job site supervisor as it relates to blueprint reading, work layout, manpower, materials, tools, etc. (F,Sp,Su). Prerequisite: Current IBEW Apprentice or Journeyman.
APPR228	Conduit Fabrication	3	This course will provide a comprehensive overview of conduit bending and fabrication procedures to develop basic competencies for field applications. (F,Sp,Su). Prerequisite: Current IBEW Apprentice or Journeyman.
APPR230	Motor Control Level I	3	Relay logic controls using industrial standards are covered. Use of correct symbols and standard construction of wiring and ladder diagrams is emphasized. Students will wire three-phase motor control circuits utilizing two- and three-wire control, and machine control circuits utilizing limit and proximity switches, timers, relays, etc. (F,Sp,Su). Prerequisite: Current IBEW Apprentice or Journeyman.
APPR231	Motor Control Level II	3	Advanced relay logic and controls using industrial standards are covered. Use of symbols and standard construction of wiring and ladder diagrams is emphasized. Students will wire three-phase motor control circuits utilizing advanced controls including two- and three-wire control, and machine control circuits utilizing limit and proximity switches, timers, relays, etc., reversing controls, plugging techniques, and multiple-motor controls. (F,Sp,Su). Prerequisite: Minimum 2.0 in APPR 230.
APPR250	Special Topics/Plumbers & Pipe	.25 to 8	This course offers apprentice and journey plumbers and pipefitters the opportunity to learn new or advanced skills in plumbing and pipefitting and other related topics. Specific content may vary with each offering and will be related to the plumbing and pipefitting profession. (F,Sp). Prerequisite: Apprentice or Journey Plumber and Pipefitter.
ARCH100	Intro to Architectural Drawing	3	This course provides a background in basic drafting. It is an introductory course that teaches the fundamental concepts of drafting and provides hands-on experience for developing drafting skills. Students will learn architectural line work, orthographic and isometric drawing, lettering, sketching and an introduction to the principles of sustainable construction. (F,Sp,Su). Prerequisite: Math Level 3. Recommended: MATH 050 or concurrently.
ARCH105	Architecture Appreciation	2	This course will introduce students to the practice of architecture and its allied professions while building a foundation for further coursework within the architecture curriculum. Fundamental aesthetic, social, and environmental issues in architecture and design, including practice, creative processes and electronic media will be examined. (F). Prerequisite: Reading Level 4 and Writing Level 4.
ARCH107	Sustainable Site Design	3	This course covers the fundamentals of landscape architecture and the reconnection of a site to its environment through the study of site analysis and design, earthwork and grading, accessibility, water conservation and supply, and landscaping. Preparation of sustainable site plan drawings will be created in accordance with course topics. (F). Prerequisite: Minimum 2.0 in ((ARCH 100 or concurrently) or Architectural Drafting Placement Test Minimum 80%) and Reading Level 4 and Writing Level 4 and Math Level 4.

COURSE	TITLE	CREDIT HOURS	TEXT
ARCH110	Visual Communications I	3	Architectural graphics is the focus of this course and will introduce students to basic techniques of freehand sketching, drafting, and perspective drawings. Rendering skills, shading, and introductory model building will also be addressed. The production of two-dimensional black and white architectural rendering and presentation drawings will be studied. (F,Sp,Su). Prerequisite: Minimum 2.0 in (ARCH 100 or concurrently) or Architectural Drafting Placement Test 80%.
ARCH111	Arch Design Fundamentals	3	Examination of the principles and elements of two-dimensional design as it relates to architecture. Specific case studies of buildings that exemplify these theories as well as organization and circulation of space and form will be analyzed. Topics include basic design theory and practice, green design project application, and visual/verbal presentation techniques. (F, Sp). Prerequisite: Reading Level 4 and Writing Level 4. Recommended: ARCH 107 or concurrently.
ARCH113	Materials & Methods of Constr.	4	An introduction to and evaluation of building materials that explores the implications of design realities, material capabilities, code limitations, and regulations on the construction process. Social, environmental, and economic impacts, life-cycle analysis, cost, sourcing, energy efficiency, and value engineering including a value system for selecting environmentally preferable products will be discussed. (F). Prerequisite: Reading Level 4 and Writing Level 4.
ARCH114	Arch Drawing/Basic AutoCAD	4	This course introduces architecture technology students to computer-aided drafting for residential application. Basic commands, drafting techniques, drawing accuracy, and industry standards will be emphasized. Lectures, in class demonstration, and lab sessions will be utilized to create two-dimensional residential drawings with value and importance placed on green design and sustainability. (F,Sp). Prerequisite: Minimum 2.0 in ((ARCH 100 or concurrently) or Architectural Drafting Test 80%) and (minimum 2.0 in (CITF108 or concurrently) or MS Windows Assessment Test) and Reading Level 4 and Writing Level 4 and Math Level 4. Recommended: Minimum 2.0 in (ARCH118 or concurrently).
ARCH118	Architectural Design/Planning	4	One in a sequence of design studio courses focusing on programmatic green building design. Emphasis is on code, research, accessibility, and adaptive use while solving small to medium scale architecture design problems. Topics include environmental and site issues, space planning, and construction document development. Applied studio assignments build on knowledge and skills acquired. (Sp). Prerequisite: Minimum 2.0 in (ARCH 107 and ARCH 111 and ARCH 113) and Reading Level 4 and Writing Level 4 and Math Level 4.
ARCH120	Visual Communications II	3	A continuation of Visual Communication I. Students will gain knowledge of basic color rendering techniques using a variety of media to enhance drawing skills and realistically render surfaces two/three-dimensionally. Specific shading, texture, light and composition techniques - both freehand and computer generated - will be explored. Composition/verbal presentation of projects will be emphasized. (Sp). Prerequisite: Minimum 2.0 in ARCH 110.
ARCH125	Environmental Systems	4	This course is designed for students of both architecture and allied professions. All elements affecting interior environments of a commercial or residential structure, such as electrical and HVAC systems, water efficiency, sustainable site and material selection, and passive solar design will be studied. Energy efficient and responsible construction practices will be emphasized. (F, Sp). Prerequisite: Reading Level 4 and Writing Level 4 and Math Level 4.
ARCH126	Architectural Model Building	3	Students in this course will enhance their design and communication skills by developing various techniques for building three-dimensional architectural models. Projects constructed will range from the most basic of study model using readily available sustainable materials, to more sophisticated presentation models focusing on the use of responsible and earth sustaining materials. (F, Sp). Prerequisite: Minimum 2.0 in ARCH 100 or Architectural Drafting Placement Test 80%. Recommended: ARCH 111.
ARCH141	History of Architecture I	3	Beginning with ancient times, this course studies the major civilizations and works of architecture, and analyzes the form and function of the built environment contributed by the most significant of the Western civilizations. A variety of visual media will be used to present the major theories, architectural works, and the significant personalities contributing to architecture up to the Italian Renaissance. (F). Prerequisite: Reading Level 5 and Writing Level 6.
ARCH142	History of Architecture II	3	This course is the second in a series of the study of architectural history of the western world. The works and figures of architecture and the decorative arts in western architectural history from the 1600's to contemporary times are examined. (Sp). Prerequisite: Reading Level 5 and Writing Level 6.
ARCH146	Preservation/Adaptive Use Arch	3	An overview of the principles and practices of the greenest and most sustainable type of architecture; recycling, preservation, and adaptive use of existing buildings. Students will have the opportunity to work on an actual building using material forensic investigation to determine material conditions and history, apply adaptive use design, and sustainable preservation practices. (F, Sp). Prerequisite: Minimum 2.0 in (ARCH 110 or concurrently) and Reading Level 4 and Writing Level 4.

COURSE	TITLE	CREDIT HOURS	TEXT
ARCH175	Special Topics in Architecture	.25 to 8	This course offers students the opportunity to learn new or advanced skills in environmentally responsible design and evaluation, computer aided drafting or other topics as applied to architecture. Specific content may vary with each offering and will be related to the Architecture Program and profession. (F,Sp,Su). Prerequisite: Determined by Section.
ARCH176	Special Topic/Architecture P/Z	.25 to 8	This course offers students the opportunity to learn new or advanced skills in computer aided drafting or other topics as applied to architecture. Specific content may vary with each offering and will be related to the Architecture Program and profession. This course will be graded on a Pass/Fail basis. (F, Sp, Su). Prerequisite: Determined by Section.
ARCH181	Universal Design Theory	3	Principles of Universal Design, accessible design elements, and differences/similarities in how people of varying abilities use space. Discussion will also include evaluation of commercial buildings required accessible to people with disabilities, and residential design for people with varying abilities. Focus will be on aesthetic, functional, and green design. (F,Su). Prerequisite: Reading Level 4 and Writing Level 4.
ARCH182	Applied Universal Design	3	Students will learn to apply the requirements of the Americans with Disabilities Act (ADA) and building codes to successfully design solutions to both commercial and residential design problems. Included will be environmentally responsible and sustainable applications. (Sp). Prerequisite: Minimum 2.0 in ARCH181. Recommended: ARCH 100.
ARCH210	Residential Detailing	4	Intermediate level computer-aided architectural detailing course using the latest release of AutoCAD software. Students will focus on development of residential construction details while building on the skills acquired in ARCH114. Students will complete advanced projects and research in a variety of typical architectural practice applications, including an emphasis on green design and sustainability. (F, Sp). Prerequisite: Minimum 2.0 in (ARCH 114 and (ARCH 113 or concurrently)).
ARCH213	Facilities Design	3	In this course, students will explore, tour, and study the design theory behind a full range of existing structures used for commercial purposes. Students will be given a site specific project and will be instructed in developing a program related solution. Students will use previously obtained CAD, research, and presentation skills to design, delineate and present their project. (F,Sp,Su). Prerequisite: Minimum 2.0 in (ARCH 100 or Architectural Drafting Placement Test 80%).
ARCH214	Structural Theory	4	This course introduces the principles of statics. The structural properties of steel, wood and concrete will be studied. The ability to read structural tables and accurately make calculations will be emphasized. The strength of alternative construction materials will be discussed. (F). Prerequisite: Math Level 5. Recommended: (ARCH 100 or concurrently) or Architectural Drafting Placement Test 80%.
ARCH216	Residential Drawing	4	A capstone course designed for advanced ARCH students to prepare residential construction documents. Added to previously obtained computer-aided drafting skills, structural theory, materials of construction, and green design theory and practice, students will advance their specific knowledge through readings, lecture and completion of a fully drafted and detailed residential construction document set. (Sp). Prerequisite: Minimum 2.0 in (ARCH 210 and ARCH 214).
ARCH218	Commercial Arch Planning	4	In this intermediate level course, students will use previously obtained drawing, research, and presentation skills to design, delineate, and present a light commercial project from basic schematics to presentation drawings. Students will be introduced to environmentally responsible design considerations and applications at the earliest design and planning stages of a project. (F). Prerequisite: Minimum 2.0 in (ARCH 114 and ARCH 118).
ARCH220	Commercial Arch Drawing	4	In this capstone course, students will complete a set of commercial construction documents based on their schematic design developed in ARCH218 using previously obtained CAD and structural theory skills. Students will further research appropriate energy saving design systems to minimize the environmental footprint of their building design. (Sp). Prerequisite: Minimum 2.0 in (ARCH 214 and ARCH 218).
ARCH232	AutoCAD Architecture	4	This course is an introduction to AutoCAD Architecture used to create three-dimensional architectural drawings that enhance the creation of construction documents with value and importance placed on green design and sustainability. The course will also emphasize advanced methods of drawing/file setup, presentation techniques, and introduce the student to various methods of program customization. (Sp). Prerequisite: Minimum 2.0 in ARCH 114.
ARCH233	Revit Architecture BIM	4	This course is an introduction to Autodesk's Revit Architecture, a three-dimensional building information modeling software (BIM) that generates all phases of design from concept sketches through construction documentation. Students will develop three-dimensional parametric models and standard two-dimensional construction drawings for typical construction use. (F, Sp, Su). Prerequisite: Reading Level 4 and Writing Level 4 and Math Level 4.

COURSE	TITLE	CREDIT HOURS	TEXT
ARCH235	Arch AutoCAD Independent Study	1 to 4	This course is intended to give advanced architectural students an opportunity to complete a special project(s) that relates to the student's curriculum. The student will research, outline, design and construct a project(s) of their own selection, with the approval and guidance of the instructor, using the AutoCAD software program. (F,Sp,Su). Prerequisite: Department Approval.
ARCH275	Sustainable Building Design	4	This course is a capstone project lab that offers students the opportunity to apply advanced skills in sustainable energy efficient architectural design and building science at a project construction site. The course will incorporate concepts that were acquired in prior coursework. Specific content may vary based on project specific requirements. (F, Sp, Su). Prerequisite: Department Approval.
ARCH276	Alternative Construction	3	A review of construction system performance considerations and survey of unconventional construction types that include concrete systems, log building, pole construction, timber frame, structural insulated panel, straw bale, tire building and earthen systems. Field examples will demonstrate various alternative technologies. Concepts will relate these systems to emerging green architecture issues; integrated technologies, material sustainability and recycling in construction. (Sp). Prerequisite: None.
ARCH278	Sustainability/Bldg. Science	4	This course examines the science that shows how buildings work as dynamic systems which are energy-efficient, sustainable, durable, and healthy for occupants. Calculation of heat loss, passive solar design and economic analysis will be integrated. Communication and analytic skills will be developed through classroom activities and research. (F). Prerequisite: None.
ARCH295	Arch Independent Study	1 to 4	This course will give advanced architectural students an opportunity to complete a special project(s) that relates to their architectural curriculum. With the approval and guidance of an instructor, the students will research, outline, design, and construct a project(s) of their own selection. (F,Sp,Su). Prerequisite: Department Approval.
ARTS102	Design & Communication	3	An examination of visual communications theory, process and history. Students will study the universal elements and principles of two-dimensional design and their applications in monochromatic, still, and time-based media. (F,Sp,Su). Prerequisite: Reading Level 5 and Writing Level 6. Recommended: Computer experience. Course Note: This course uses Adobe Photoshop on Macintosh computers. Online students are required to have semester-long access to Adobe Photoshop CS5 to complete their assignments. Students may access this software in the LCC TLC 100 Computer Lab. Access to a Wacom Intuos or Bamboo Digital Drawing Tablet is highly recommended.
ARTS103	3-Dimensional Design	3	This is an introductory course exploring the elements and principles of three-dimensional design. The course will examine traditional and time-based potentials of materials and objects. (F,Sp). Prerequisite: Minimum 2.5 in ARTS 102 and Reading Level 5 and Writing Level 6.
ARTS105	Adobe Photoshop for Non-Majors	2	This course is designed to give non-majors an introduction to the Adobe Photoshop software. Students will learn file formats and saving files properly, scanning, color correction and adjustment, compositing, and image manipulation of print and digital images for web use and printed output. (F,Sp,Su). Prerequisite: None. Recommended: Computer experience.
ARTS110	Special Topics in Fine Arts	1	This course offers students the opportunity to learn new art techniques, skills and/or styles. These topics are open to students of all skill levels. Specific topics will vary by semester; check semester schedule book for topics to be offered. (F,Sp,Su). Prerequisite: None.
ARTS114	Oriental Watercolor	2	Discover the beauty and artistry of oriental watercolor. Learn the materials and techniques that are unique to this art form including the use of rice paper, calligraphy, and seals. In addition, you will explore the philosophy and culture behind this ancient art form. (F,Sp). Prerequisite: None. Course Note: Cost of this class is \$295. Uses Community and Continuing Education refunding rules. If you have any questions, call Community and Continuing Education at (517)483-1860.
ARTS131	Drawing I	3	An introductory course in visual thinking, conceptual drawing, and studio practices. Students will learn to translate verbal and written concepts through creative processes into visual information in sketches, developmental drawings, and finished imagery. Fundamental elements of drawing and principles of perspective are covered. (F,Sp,Su). Prerequisite: Minimum 2.5 in ARTS 102 or concurrently and Reading Level 5 and Writing Level 6.

COURSE	TITLE	CREDIT HOURS	TEXT
ARTS132	Figure Drawing	3	An intermediate level course in visual thinking, conceptual drawing, and studio practices exploring fundamental elements of drawing, visualization, and perception of the human figure, using a variety of drawing media and methods. Live models will be used. (F,Sp,Su). Prerequisite: Minimum 2.5 in ARTS 131 and Reading Level 5 and Writing Level 6.
ARTS140	Printmaking I	3	An introduction to Printmaking processes, tools, and the vocabulary of the printmaker. Students will work with intaglio, monotype, and relief printing processes. (F). Prerequisite: None.
ARTS141	Printmaking II	3	Students expand on processes and concepts introduced in Printmaking I (ARTS140). Emphasizes refining technical skills and conceptual development. (F). Prerequisite: Minimum 2.5 in ARTS 140.
ARTS145	Screen Printing I	4	An introduction to basic silkscreen stencil processes with an emphasis on registration techniques. Includes constructing a frame and making a photo transparency. (F,Sp). Prerequisite: Minimum 2.5 in ARTS 102 or concurrently. Course Note: If you have any questions, call Community and Continuing Education at (517)483-1860.
ARTS146	Screen Printing II	4	Students expand on processes and concepts introduced in Screen Printing I (ARTS145). Includes an in-depth study of photographic processes in combination with paper, cut film, and block-out stencils. (F,Sp). Prerequisite: Minimum 2.5 in ARTS 145. Course Note: If you have any questions, call Community and Continuing Education at (517)483-1860.
ARTS151	Color & Illustration	3	An introduction to color and digital illustration. Integrates color theory with foundational drawing and design skills. This course prepares students in digital image creation for all ARTS curricula. (F,Sp). Prerequisite: Minimum 2.5 in (ARTS 102 and ARTS 131) and Reading Level 5 and Writing Level 6. Course Note: This course uses Corel Painter 12 software on Apple OS X computers.
ARTS153	Image and Idea	3	This is an introductory level course in visual thinking, conceptual drawing and studio practices. Students will learn to translate verbal and written ideas (concepts) through creative processes into visual information in the form of black & white and color drawings that are consistent with specific reproduction issues. (Sp). Prerequisite: Minimum 2.5 in ARTS 102 and ARTS 131.
ARTS162	Type Communications	3	An introduction to the utilization of type in a variety of visual communications with an emphasis on creativity and problem solving. Students will be introduced to the tools and techniques of manual and digital type formatting in professional type layout for print and web purposes. (F,Sp,Su). Prerequisite: Minimum 2.5 in ARTS 102 or concurrently and Reading Level 5 and Writing Level 6. Course Note: Internet students are required to have semester-long access to Adobe Illustrator CS5/CS5.5. Students have access to this software in the LCC TLC 100 Computer Lab.
ARTS164	Vector Drawing	3	A creative course involving vector-based illustration software. Students will draw by manipulation of algorithmically created arcs, lines, and curves to form shapes. The focus is on graphics information communication. (F,Sp). Prerequisite: Minimum 2.5 in (ARTS 102 and ARTS 131) or concurrently and Reading Level 5 and Writing Level 6. Recommended: ARTS 162. Course Note: Adobe Illustrator and Adobe Flash software on Apple Macintosh computers are used.
ARTS171	Comp Graphics/Digital Imaging	3	An introduction to computer manipulation of photographic images. (F,Sp,Su). Prerequisite: Minimum 2.5 in (ARTS 102 or PHOT 118) or concurrently and Reading Level 5 and Writing Level 6. Course Note: Adobe Photoshop CS5 software is used. Online students are required to have semester-long access to Adobe Photoshop CS5 and a flatbed scanner to complete their assignments. Students have access to these in the LCC TLC Computer Lab.
ARTS173	Computer Graphics/Web Design	3	A course in the effective visual presentation of ideas for the web from concept and design to structure, preparation and production. Focus on the elements and principles of design as applied to layout, graphics and animation. (F,Sp,Su). Prerequisite: Minimum 2.5 in ARTS 171 or concurrently and Reading Level 5 and Writing Level 6. Course Note: This course uses Adobe Dreamweaver CS5.5 on Apple OS X computers.
ARTS175	Creative Design and Publishing	3	An introductory creative course involving page layout software and related programs utilizing the Macintosh computer. The focus is on using related publishing applications for design, layout and prepress. (F,Sp). Prerequisite: Minimum 2.5 in (ARTS 102 and ARTS 162) or concurrently and Reading Level 5 and Writing Level 6. Course Note: This course uses Adobe InDesign CS 5.5 on Apple OS X computers.

COURSE	TITLE	CREDIT HOURS	TEXT
ARTS178	Flash Programming for Artists	3	ActionScript is the programming language used by the Flash platform for interactive applications. Students will learn how and where ActionScript is written including customizing the ActionScript environment as well as learning the basic structure, format, and aspects of the language. Students will be required to complete computer-based assignments using ActionScript. (F,Sp). Prerequisite: Reading Level 5 and Math Level 6. Course Note: This course uses Adobe Flash.
ARTS179	Interface Design	3	Introduction to concepts and practices of user-centered interaction design applied to interfaces for human-computer interactions such as Web sites, instructional and immersive applications, and computer games. Explores processes of developing information architecture, navigation, visual layout and aesthetics of interfaces according to principles of user-centered design, emphasizing accessibility and usability. (F,Sp). Prerequisite: Minimum 2.5 in ARTS 102 and Reading Level 5 and Writing Level 6. Course Note: This course uses Adobe Illustrator and Photoshop CS6.
ARTS183	Design Markets and Influences	3	An introductory course that examines the theory, practice, and development of modern and contemporary graphic design, typography, and imagery. The emphasis is on conceptual design and relevant styles and techniques used to achieve marketing and advertising goals. This course investigates how the various styles and techniques of the periods discussed reflect and affect design ideas, issues and social values. (F,Sp). Prerequisite: Reading Level 5 and Writing Level 6. Recommended: HUMS 212.
ARTS190	Matting and Framing Techniques	1	An overview of the various materials and techniques for displaying and exhibiting artwork. Students will apply demonstrated techniques to matting and framing their work. (F,Sp). Prerequisite: None. Course Note: ARTS 190 uses the college standard refunding rules. If you have any questions, call Community and Continuing Education at (517)483-1860.
ARTS195	Employ/Busn Issues for Artists	1	An introduction to business, legal, and marketing issues relevant to visual artists. Students will be introduced to copyright, contracts and negotiation concerns, and basic record keeping. (F,Sp). Prerequisite: None. Course Note: You must attend all sessions to obtain course credit.
ARTS200	Painting I	3	An introduction to oil and/or acrylic painting. The course examines the basic materials, tools, techniques, and modes of expression of painting. (F,Sp). Prerequisite: None. Course Note: Students purchase own art supplies and materials (approx. \$150).
ARTS201	Painting II	3	A continuation of Painting I (ARTS200) emphasizing more advanced techniques and increasingly complex problems in painting. A variety of media, techniques, and approaches is explored. (F,Sp). Prerequisite: Minimum 2.5 in ARTS 200. Course Note: Students purchase own art supplies and materials (approx. \$150).
ARTS203	Figure Painting	4	A studio course in the human figure using various media such as oil paint, watercolor, acrylic paint, and pastel. Live models will be used. (F,Sp). Prerequisite: Minimum 2.5 in ARTS 200. Course Note: Students purchase own art supplies and materials.
ARTS204	Watercolor I	4	Introductory course that explores traditional watercolor techniques. Course builds on skills in drawing and design. Produce your own watercolor artwork while learning about paper characteristics, degrees of wetness, and brushes. (F,Sp). Prerequisite: Minimum 2.5 in (ARTS 102 and ARTS 131). Course Note: ARTS 204 uses the college standard refunding rules. If you have any questions, call Community and Continuing Education at (517)483-1860.
ARTS205	Watercolor II	4	Take your watercolor painting skills to the next level! This intermediate course studies the art of watercolor, building on techniques covered in Watercolor I. (F,Sp). Prerequisite: Minimum 2.5 in ARTS 204. Course Note: ARTS 205 uses the college standard refunding rules. If you have any questions, call Community and Continuing Education at (517)483-1860.
ARTS206	Advanced Watercolor	4	Great for the advanced watercolor student or hobbyist. The goal of this course is to prepare students to create artwork ready for exhibition or portfolio under the guidance of the instructor. (F,Sp). Prerequisite: Minimum 2.5 in ARTS 205. Course Note: ARTS 206 uses the college standard refunding rules. If you have any questions, call Community and Continuing Education at (517)483-1860.

COURSE	TITLE	CREDIT HOURS	TEXT
ARTS208	InfoGraphics	3	This is an advanced digital art course emphasizing visualizations from data, observation, and/or research. Imagery will be created from individual or integrated multiple software packages for digital display or print. This course emphasizes the effective communication of information through visual means. (F,Sp). Prerequisites: Minimum 2.5 in (ARTS 102 and ARTS 131 and ARTS 162 and ARTS 164 and ARTS 171) and Reading Level 5 and Writing Level 6.
ARTS209	InfoGraphics Interactive	3	This is a creative course involving vector-based animation software to produce interactive graphics. The focus is on the concepts of information graphics for use in on-screen and time-based visual communication. (Sp). Prerequisite: Minimum 2.5 in (ARTS 102 and ARTS 131 and ARTS 164) and Reading Level 5 and Writing Level 6. Recommended: ARTS 162.
ARTS216	Humorous Illustration I	3	Basic humorous illustration/cartooning foundations are demonstrated. Exercises are given on cartooning heads, animals, objects, and drawing techniques. Graded projects include a caricature utilizing a drawing technique. Originality and imagination are emphasized. (F,Sp). Prerequisite: Minimum 2.5 in ARTS 132 and Reading Level 5 and Writing Level 6.
ARTS217	Humorous Illustration II	3	A continuation of Humorous Illustration I designed to expand the student's humorous illustration skills through a variety of black-and-white and color projects. Projects will concentrate on the various commercial applications of humorous illustration. (Sp). Prerequisite: Minimum 2.5 in ARTS 216 and Reading Level 5 and Writing Level 6.
ARTS221	Airbrush Techniques I	4	Students will be introduced to shading and creating textures in black and white, and color, using a variety of processes. Assignments will include masking methods and freehand techniques. (F,Sp). Prerequisite: None. Course Note: ARTS 221 uses CCE refunding rules. If you have any questions, call Community and Continuing Education at (517)483-1860.
ARTS222	Airbrush Techniques II	4	This class continues the methods developed in Airbrush Techniques I, while emphasizing more complex projects. Portrait rendering and painting of non-metallic surfaces will be studied and various materials will be used including fabric, leather, fingernails and pastries. (F,Sp). Prerequisite: Minimum 2.5 in ARTS 221 or (minimum 2.5 in ARTS 131 or concurrently). Course Note: ARTS 222 uses the college standard refunding rules. If you have any questions, call Community and Continuing Education at (517)483-1860.
ARTS226	Storyboards & Animatics	3	Focuses on applying industry-standard storyboarding and animatic techniques. Topics include the purposes and formats of storyboards and the application of storyboarding techniques to the creation of storyboards with or without a written script. Completed storyboards will be digitized and edited using various software to produce an animatic. (F,Sp). Prerequisite: Minimum 2.5 in ARTS 151 and Reading Level 5 and Writing Level 6. Course Note: This course uses Adobe Flash CS5.5 on Apple OS X computers.
ARTS228	Advanced Digital Imaging	3	An advanced level study in the manipulation and processing of digital photographic images. Emphasis is on professional scanning, manipulation and output of digital images using available software products. Instruction includes preparation of images for prepress (hardcopy) and soft display (Multimedia, CD-ROM and World Wide Web). (F,Sp,Su). Prerequisite: Minimum 2.5 in ARTS 171 and Reading Level 5 and Writing Level 6.
ARTS229	Comp Graphics/Adv Web Design	3	An advanced course in interaction and its application to web design problems. Focuses on the structuring of information, conceptualization and sequencing in the design of web sites. (F,Sp). Prerequisite: Minimum 2.5 in ARTS 173 and Reading Level 5 and Writing Level 6. Course Note: This course uses Adobe Dreamweaver.
ARTS231	Comp Graphics/Adv Illustration	3	This is an advanced digital art course emphasizing visualizations from data, observation, and/or imagination. Imagery will be created from individual or integrated multiple software packages for digital or print output. Aesthetic issues of printing, time and digital environment genres will be introduced. (F,Sp). Prerequisite: Minimum 2.5 in (ARTS 151 and ARTS 171) and Reading Level 5 and Writing Level 6.
ARTS232	Comp Graphics/2-D Animation	3	Creation of 2-D animations using the computer. Emphasis is on the theory and principles of animation. Student will develop an animation of a bipedal character. (F,Sp). Prerequisite: Minimum 2.5 in (ARTS 132 and ARTS 151 and ARTS 171) and Reading Level 5 and Writing Level 6. Course Note: This course uses Adobe Flash CS5.5 on MAC OS X Computers.

COURSE	TITLE	CREDIT HOURS	TEXT
ARTS234	Comp Graphics/3-D Animation I	3	Concepts and techniques of 3D computer animation. An introduction to the world of Digital Form, Space and Lighting. Topics covered in this course include the theories of 3-D space, surface modeling, rendering, lighting and key frame animation. Includes an overview of the history of 3D computer modeling, rendering and animation. (F,Sp). Prerequisite: Minimum 2.5 in ARTS 151 and ARTS 171 and Reading Level 5 and Writing Level 6. Recommended: PHYS 120. Course Note: This course uses Autodesk Maya on Mac OS X computers.
ARTS235	Comp Graphics/3-D Animation II	3	This course builds upon ARTS234. It continues the approach of increasing skills and artistic practice in all areas of 3D animation: concept, modeling, animation and rendering. (F,Sp). Prerequisite: Minimum 2.5 in ARTS 234 and Reading Level 5 and Writing Level 6. Course Note: This course uses Autodesk Maya on Mac OS X computers.
ARTS237	Comp Graphic/Flash Game Design	3	This course introduces students to the fundamental programming concepts used to create 2D games. Students will learn what makes a good game, how to design it, and how to program it for web delivery using ActionScript, the object-oriented scripting language in Flash. (Sp). Prerequisite: Minimum 2.5 in ARTS 178 and Reading Level 5 and Math Level 5. Recommended: Experience with simple programming concepts.
ARTS240	Art for Elementary Teachers	3	Especially for elementary school teachers responsible for the student art experience. Emphasis on developing a greater art appreciation, awareness of art forms, and competency working with a variety of art media. Covers the creative and mental growth of children and their needs in an art situation. (F,Sp,Su). Prerequisite: Reading Level 5 and Writing Level 6. Recommended: EDUC 201 and EDUC 220. Course Note: EDUC201 and EDUC220 are prerequisites for transfer of this course to Central Michigan University.
ARTS243	i3D I	3	This course provides an introduction to the basics of interactive 3D application development. At the completion of this course, students will be able to import 2D and 3D assets, add interaction, and behaviors to produce robust interactive applications and stereo optic output. (F, Sp). Prerequisite: Minimum 2.5 in (ARTS 178 and ARTS 234) and Reading Level 5 and Writing Level 6.
ARTS251	Graphic Design Communications	3	A comprehensive overview of design communications and the role of the graphic artist. Methods, computer software and hardware issues will be covered with the focus on persuasive design communications. (F,Sp). Prerequisite: Minimum 2.5 in ARTS 164 and ARTS 175 and Reading Level 5 and Writing Level 6. Course Note: This course uses Adobe CS5/CS5.5 software on Apple OS X Computers.
ARTS252	Graphic Design Publications	3	Publication design and the graphic artist's role in design and production of longer documents is the focus of this advanced collaborative course. The emphasis is on concept, typography and visual elements in a weekly, monthly or quarterly publication. (F, Sp). Prerequisite: Minimum 2.5 in ARTS 251 and Reading Level 5 and Writing Level 6. Course Note: This course uses Adobe CS/CS5.5 software on Apple OS X computers.
ARTS253	Graphic Design Branding	3	This advanced class focuses on branding of products and services for mass market advertising. The course will focus on aspects relevant to a marketing campaign as well as on creating innovative concepts and developing an effective personal design style. (F,Sp). Prerequisite: Minimum 2.5 in ARTS 251 and Reading Level 5 and Writing Level 6. Course Note: This course uses Adobe CS5/CS5.5 software on Apple OS X computers.
ARTS261	Topics in Design & Multimedia	1 to 3	A study of specific topics affecting the areas of graphic design and multimedia. This course is designed to expose students to the latest theories and practices in the area. Course format may include lectures, discussion, demonstration and hands-on experiences. (F,Sp). Prerequisite: Determined by Section.
ARTS269	The Portfolio	2	Under advisor supervision, students will assemble their best work into a cohesive, relevant presentation for the purpose of securing career-oriented employment. Job search/market skills content, including creative resumes, letter-writing, and self-promotion will focus on matching individual presentations to specific career goals. ARTS269 is intended as the final program course. (F,Sp). Prerequisite: Department Approval. Course Note: Fine Art and transfer students should see an Art, Design and Multimedia Advisor before enrolling in ARTS 269. Please check with the Communication, Media and the Arts Department Office (GB 131) for current department approval forms.
ARTS270	Comp Graphics Independ Study	3	Individual pursuit of special projects not incorporated in regular class offerings. The student must submit a written application detailing his or her project to receive department approval. (F,Sp,Su). Prerequisite: Department Approval.

COURSE	TITLE	CREDIT HOURS	TEXT
ARTS281	Art Internship	3	Students will gain pre-career experience by working in a professional environment under the supervision of a professional artist/designer. Regularly scheduled progress reports will be given and discussed with supervising faculty member. A typical internship will average 210 hours in a semester. (F,Sp,Su). Prerequisite: Department Approval.
ARWS120	Basic Drawing	1	This course will introduce you to the basic approaches and techniques involved in drawing objects using the concepts of line, shape, value, and perspective and using a variety of materials such as charcoal, graphic pencil, and felt tip pen. In this studio course you will learn about the development of imagery and expression, observational and imaginative drawing. Identify light sources and value gradations. Demonstrate proportion and scale. Intended for non-art majors, this class is open to all who want to draw. (F,Sp,Su). Prerequisite: None. Course Note: Cost of this seminar is \$139. Uses Community and Continuing Education refunding rules. If you have any questions, call Community and Continuing Education at (517)483-1860.
ARWS136	Intro to Adobe Illustrator	1	A condensed, hands-on workshop designed to provide the student with a working knowledge of Adobe Illustrator software utilizing a Macintosh computer. Emphasis is on desktop publishing applications. (F,Sp,Su). Prerequisite: None. Course Note: Cost of this seminar is \$129. Uses Community and Continuing Education refunding rules. If you have any questions, call Community and Continuing Education at (517)483-1860.
ARWS137	Intro to Adobe Photoshop	1	Learn about Photoshop, the leading digital image editing application for the Internet, print and other new media disciplines. Hands-on course will cover basics in photo manipulation and graphics design. (F,Sp,Su). Prerequisite: None. Course Note: Cost of this seminars is \$129. Uses Community and Continuing Education refunding rules. If you have any questions, call Community and Continuing Education at (517)483-1860.
ARWS139	Multi-Media Web Graphics	1	A hands-on course designed to provide the student with a working knowledge of multi-media and web page design. Emphasis is on web design issues for artistic, creative and/or visual learners using Macintosh computers and a variety of multi-media/web software. (F,Sp,Su). Prerequisite: None. Course Note: Cost of these seminars is \$129. If you have any questions, call Community and Continuing Education at (517)483-1860.
ARWS141	Watercolor Workshop	1	A collage of watercolor techniques emphasizing classical and experimental watercolor for both beginning and advanced students. This condensed workshop is designed to provide you with an overview of watercolor tools and techniques.(F,Sp,Su). Prerequisite: None. Course Note:Cost of this seminar is \$139. Uses Community and Continuing Education refunding rules. If you have any questions, call Community and Continuing Education at (517)483-1860.
ARWS145	Landscape Painting & Drawing	1	Using the media of their choice, students will be exposed to color, perspective and compositional strategies of the landscape to create their work. Most sessions are spent in the field. (Su). Prerequisite: None. Course Note: Cost of this seminar is \$139. Uses Community and Continuing Education refunding rules. If you have any questions, call Community and Continuing Education at (517)483-1860.
ARWS201	Intro to Macro Dreamweaver	1	A condensed, hands-on workshop designed to provide the student with a beginning knowledge of Macromedia Dreamweaver software for web site design. (F,Sp). Prerequisite: None. Recommended: Windows 98/2000/XP experience.
ARWS203	Intro to Macromedia Flash	1	A condensed, hands-on workshop designed to provide the student with a beginning knowledge of Macromedia Flash software for web site design. (F,Sp). Prerequisite: None. Recommended: Windows 98/2000/XP experience.
ARWS221	Calligraphy I	1	Introduces the student to the art of fine writing using italic pens. Emphasis on hand lettering, surveying different styles and scripts used in early manuscripts, and adaptation to modern use. (F,Sp). Prerequisite: None. Course Note: Cost of these seminars is \$139. If you have any questions, call Community and Continuing Education at (517)483-1860.
ARWS224	Cartooning Workshop	1	An introduction to cartooning that will help you develop characters: head shapes, expressions, exaggerated bodies and actions. Caricatures and basic shading techniques will be used to create a simple comic strip. Previous drawing experience helpful, but not required. (F,Sp,Su). Prerequisite: None. Course Note: Cost of these seminars is \$129. Uses Community and Continuing Education refunding rules. If you have any questions, call Community and Continuing Education at (517)483-1860.

COURSE	TITLE	CREDIT HOURS	TEXT
ASTR201	Introductory Astronomy	4	A survey course of astronomy. Topics include the celestial sphere, apparent motions, and orbital mechanics; the nature of light, spectroscopy and astronomical instrumentation; the Earth, the Moon, the Sun and the solar system; stellar nucleosynthesis, and stellar characteristics, distances, classification and evolution; and galaxies and cosmology. (F,Sp,Su). Prerequisite: Reading Level 5 and Writing Level 6 and (Math Level 5 or MATH 107 concurrently).
AUTB110	Non-Structural Repair	3	This course introduces the student to elementary repairs that are completed in the collision repair industry. This allows the student to become familiar with the collision repair field environment. (F,Sp). Prerequisite: Minimum 2.0 in (AUTO 100 or concurrently) and Reading Level 3 and Writing Level 2 and Math Level 3. Recommended: Evidence of mechanical ability.
AUTB112	Advanced Non-Structural Repair	5	This course is for students who are familiar with the auto body repair environment and are ready to begin development of specific marketable repair skills. (F,Sp). Prerequisite: Minimum 2.0 in AUTB 110. Recommended: Evidence of mechanical ability.
AUTB114	Auto Body Welding and Cutting	5	This course will present welding processes that will be the basis of many of the repair techniques in any advanced auto body course. MIG, TIG, oxyacetylene, resistance spot welding and plasma arc cutting are included. (F,Sp,Su). Prerequisite: Minimum 2.0 in (AUTO 100 or concurrently) and Reading Level 3 and Writing Level 2 and Math Level 3. Recommended: Evidence of mechanical ability.
AUTB116	Auto Body Structural Repair	5	This course addresses the repair of the unibody and vehicle frames which often are damaged by major collision forces. The student will learn damage diagnosis through computerized measuring. Repair techniques will include stress relief, welding and corrosion protection. (F, Sp). Prerequisite: Minimum 2.0 in (AUTB 110 and AUTB 114).
AUTB118	Introduction to Refinishing	5	The material in this course will form the basis for all automotive refinishing work. Surface preparation, material selection and the use of hand and power tools (including automotive spray guns) will be covered. (F,Sp,Su). Prerequisite: Minimum 2.0 in (AUTO 100 or concurrently) and Reading Level 3 and Writing Level 2 and Math Level 3. Recommended: Evidence of mechanical ability.
AUTB120	Advanced Refinishing	5	This course builds on skills developed in AUTB118. Overall refinishing, spot repairs and color matching with a variety of contemporary color-coat materials will be stressed. (F,Sp). Prerequisite: Minimum 2.0 in AUTB 118.
AUTB122	Collision Repair Estimating	3	This course prepares the student for analyzing collision damage, determining what parts are needed for repair, calculating labor allowances and figuring the total cost of repair. Collision repair manuals and computer programs will be used as sources of information. (Sp). Prerequisite: Minimum 2.0 in (AUTB 112 and AUTB 116 and AUTB 120).
AUTB124	Automotive Plastic Repair	3	This course covers repair techniques and materials for repairing the wide variety of plastic materials used in the manufacturing of current vehicles. Refinishing repaired parts is also included. (Sp). Prerequisite: Minimum 2.0 in AUTB 118.
AUTB160	Adv Auto Body Repair/Painting	4	This course covers the identification and safe operation of various equipment in auto body and refinishing facilities. Students will learn to diagnose problems, make necessary repairs and perform refinishing. (F,Sp,Su). Prerequisite: Department Approval.
AUTB162	Collision Repair Internship	3	Students are able to earn credits while employed as a technician in collision repair. The program coordinator must approve the training station and working conditions. (F,Sp,Su). Prerequisite: Department Approval. Recommended: Evidence of mechanical ability.
AUTB163	Auto Body Independent Study	1 to 4	Special research projects and/or individual readings are used to apply personal and professional experience to the academic area of interest. The completion of a written project report is required. (F,Sp,Su). Prerequisite: Department Approval. Recommended: Evidence of mechanical ability.
AUTB210	Topics/Contemp Collision Repr	.25 to 8	This course offers students the opportunity to learn new or advanced skills in contemporary collision repair issues. Specific content may vary with each offering and will be related to the Collision Repair Program and profession. (F,Sp,Su). Prerequisite: Department Approval.

COURSE	TITLE	CREDIT HOURS	TEXT
AUTB230	Custom Graphics	3	This course provides an introduction to automotive graphics, custom painting, pinstriping, lettering, and texturing as well as the equipment, materials, and tools needed to apply these effects. Graphic layout and design are also covered. Hands-on projects include flames, marbleizing, murals and other "trick" painting. (F,Sp). Prerequisite: Minimum 2.0 in AUTB 120.
AUTB240	Auto Body Restoration	4	Students will learn skills, equipment use, and techniques to perform auto body restoration. This will include panel evaluation, preparation, and preservation, as well as fabrication, shrinking, stretching, and hammer welding techniques. Students will also learn to fill, sand, and prime panels for painting. (F,Sp,Su). Prerequisite: Minimum 2.0 in (AUTB 114 and (AUTB 106 or AUTB 118)).
AUTO100	Basic Auto Service & Ethics	3	This course begins with an introduction to automotive systems and proper procedures to perform minor service on today's vehicles. Service order writing, electronic service information, digital volt ohm meter, and diagnostic equipment are introduced. Proper tool and equipment and shop safety will be stressed. An introduction to advanced technology vehicles will be included. (F,Sp,Su). Prerequisite: Reading Level 3 and Writing Level 2 and Math Level 3. Course Note: 1) Informational sessions for AUTO 100 students are scheduled at the following times: 6:00pm on Thursday, December 5, 2013; 11:00am on Saturday, December 7, 2013; 6:00pm on Monday, January 6, 2014; and 11:00am on Saturday, January 11, 2014. ALL STUDENTS IN AUTO 100 MUST ATTEND ONE OF THESE ONE HOUR INFORMATIONAL SESSIONS. There will be assignments that must be completed before students will be allowed in the Automotive Lab. Sessions will be held in Room W157 at West Campus. 2) Students need to bring their own safety glasses and dress in appropriate work clothes to start working in the lab on the first day of class.
AUTO111	Basic Electrical Diagnosis	3	This course covers basic electrical/electronic theory and how circuits work. Electrical test equipment will be discussed. Students will learn to access wiring diagrams, wiring repair in vehicles, and repair malfunctions safely and according to National Automotive Technicians Education Foundation (NATEF) standards. (F, Sp). Prerequisite: Minimum 2.0 in (AUTO 100 or concurrently) and Reading Level 3 and Writing Level 2 and Math Level 3. Course Note: Students need to bring their own safety glasses and dress in appropriate work clothes to start working in the lab on the first day of class.
AUTO112	Batteries, Starting, Charging	2	This course covers automotive battery, starter and charging systems theory, operation and diagnosis according to National Automotive Technicians Education Foundation (NATEF) standards. (F, Sp). Prerequisite: Minimum 2.0 in (AUTO 100 and AUTO 111 or concurrently) and Reading Level 3 and Writing Level 2 and Math Level 3. Course Note: Students need to bring their own safety glasses and dress in appropriate work clothes to start working in the lab on the first day of class.
AUTO113	Electrical Accessory Diagnosis	2	Theory, operation and repair of Automotive lighting systems, motor driven accessories, including horn and wipers according to National Automotive Technicians Education Foundation (NATEF) standards. (F, Sp). Prerequisite: Minimum 2.0 in (AUTO 100 and AUTO 111 and AUTO 112 or concurrently) and Reading Level 3 and Writing Level 2 and Math Level 3. Course Note: Students need to bring their own safety glasses and dress in appropriate work clothes to start working in the lab on the first day of class.
AUTO120	Manual Transmissions/Driveline	3	This course covers theory and operation of manual transmissions/transaxles, clutch systems, differentials, four-wheel drive components, universal/constant velocity joint and other driveline components. Students will diagnose, disassemble and inspect these components. Noise, vibration and harshness issues are also covered in this course. (F,Sp). Prerequisite: Minimum 2.0 in AUTO 100 or concurrently. Course Note: Students need to bring their own safety glasses and dress in appropriate work clothes to start working in the lab on the first day of class.
AUTO121	Automatic Transmission/Transax	5	This course covers the operation of transmission/transaxle components. Students will learn in detail overhaul, testing, diagnosis and repair procedures including modern electronic transmissions. (F,Sp). Prerequisite: Minimum 2.0 in (AUTO 110 or AUTO 111 or concurrently). Course Note: Students need to bring their own safety glasses and dress in appropriate work clothes to start working in the lab on the first day of class.
AUTO122	Advanced Transmissions	3	This course expands on knowledge obtained in AUTO121. Topics include diagnosis, disassembly, inspection, and reassembly of automatic transmissions/transaxles. Students will gain knowledge of three additional transmissions/transaxles in this class. All aspects of this course follow National Automotive Technicians Education Foundation (NATEF) standards. (Sp). Prerequisite: Minimum 2.0 in AUTO 121. Course Note: Students need to bring their own safety glasses and dress in appropriate work clothes to start working in the lab on the first day of class.

COURSE	TITLE	CREDIT HOURS	TEXT
AUTO130	Engine Mech Diagnosis & Repair	5	This course provides an in-depth study of engine design, operation, troubleshooting, and in-vehicle service procedures for modern gasoline engines including: engine coolant systems, fluid leak diagnosis, timing belt service, in vehicle repairs, noise diagnosis and other related service associated engine procedures. (F,Sp). Prerequisite: Minimum 2.0 in (AUTO 100 and (AUTO 110 or AUTO 111 or concurrently)). Course Note: Students need to bring their own safety glasses and dress in appropriate work clothes to start working in the lab on the first day of class.
AUTO131	Advanced Automotive Engines	3	This course covers the disassembly, inspection (using specialized tools and measuring equipment), repair and reassembly of an automotive engine. Students will be allowed to work on their own engines. (F,Sp,Su). Prerequisite: Minimum 2.0 in AUTO 130.
AUTO133	Small Engine Repair	3	This course uses the theory of operation for "small engines" (lawn mowers, outboard motors, chain saws, and other engines up to 18 horsepower) to diagnose problems in operation, repair or overhaul defective components, and make engines operate according to manufacturer standards. (F,Sp). Prerequisite: Minimum 2.0 in (AUTO 100 or concurrently). Course Note: Students need to bring their own safety glasses and dress in appropriate work clothes to start working in the lab on the first day of class.
AUTO140	Brake/ABS/Trac Control Systems	4	This course covers theory, operation and service of conventional disc and drum braking systems and other related brake system components. Students will diagnose and service anti-lock brake systems, traction control systems and other brake electrical circuits. (F,Sp,Su). Prerequisite: Minimum 2.0 in (AUTO 110 or AUTO 111 or concurrently). Course Note: Students need to bring their own safety glasses and dress in appropriate work clothes to start working in the lab on the first day of class.
AUTO150	Steering & Suspension Systems	3	This course covers the theory and operation of today's steering and suspension systems including two-wheel and four-wheel electronic alignment systems, and electronic steering and suspension systems. Diagnosis of wheel and tire vibration and noise will also be covered. (F, Sp, Su). Prerequisite: Minimum 2.0 in (AUTO 100 or concurrently). Course Note: Students need to bring their own safety glasses and dress in appropriate work clothes to start working in the lab on the first day of class.
AUTO160	Heating/Air Conditioning Sys	3	This course covers the theory of operation of modern heating and air conditioning systems. Included are proper diagnostic and repair procedures. Recycling and storage of CFC's and the effect on the environment are stressed. Students will also apply for CFC handling certification. (F,Sp,Su). Prerequisite: Minimum 2.0 in (AUTO 110 or AUTO111 or HERT125 (formerly HERT 101)). Course Note: Students need to bring their own safety glasses and dress in appropriate work clothes to start working in the lab on the first day of class.
AUTO190	Automotive Special Topics	.25 to 8	The Automotive Special Topics series will feature topics related to the automotive industry. The lectures will allow participants to explore a wide variety of topics that will range from State of Michigan Recertification and Alternative Fuels to Advanced Drivability Diagnosis. Specific topics vary each semester; check the semester schedule book for topics to be offered. (F,Sp,Su). Prerequisite: Determined by Section.
AUTO191	Automotive Workshop Series	0.25	The Automotive Workshop Series will feature topics related to the automotive industry. The workshop format allows for hands-on participation in the particular topic area. Participants can explore topics from ABS Diagnosis to 4-Gas Analysis. Specific topics vary each semester; check the semester schedule book for topics to be offered. (F,Sp,Su). Prerequisite: None.
AUTO192	Automotive Workshop Series	0.5	The Automotive Workshop Series will feature topics related to the automotive industry. The workshop format allows for hands-on participation on the particular topic area. Participants can explore topics from ABS Diagnosis to 4-Gas Analysis. Topics will vary by the semester; check the semester schedule book for topics to be covered. (F,Sp,Su). Prerequisite: None.
AUTO195	Motorcycle Service	3	This course will help prepare students to work on motorcycles, as well as all terrain vehicles and scooters, and pass the State of Michigan Motorcycle Technician test. The course will cover suspension service, fuel supply systems, basic electrical and charging systems, engine service, tune up procedures and power train operation and service. (F, Sp). Prerequisite: Minimum 2.0 in (AUTM 101 or AUTO 100). Course Note: Students need to bring their own safety glasses and dress in appropriate work clothes to start working in the lab on the first day of class.

COURSE	TITLE	CREDIT HOURS	TEXT
AUTO211	Adv Auto Electrical/Electronic	4	Theory, operation and repair of automotive accessories, including microprocessors as applied to electronic computer controlled systems. Emphasis will be placed on testing and diagnosis of vehicle communication systems and subsystems, according to National Automotive Technicians Education Foundation (NATEF) standards.(F, Sp). Prerequisite: Minimum 2.0 in (AUTO 110 or AUTO 113) and Reading Level 3 and Writing Level 2 and Math Level 3. Course Note: Students need to bring their own safety glasses and dress in appropriate work clothes to start working in the lab on the first day of class.
AUTO221	Gasoline Engine Control Sys	5	This course covers the theory and operation of ignition, fuel and emission systems. Students will gain practical experience through diagnosing, testing, and servicing these systems. (F, Sp). Prerequisite: Minimum 2.0 in (AUTO 211 or concurrently). Course Note: Students need to bring their own safety glasses and dress in appropriate work clothes to start working in the lab on the first day of class.
AUTO231	Lt. Diesel Engine Control Sys	4	This course covers engine management of a light duty diesel engine, including diagnosis and repair of electronic diesel fuel injection systems, air induction systems, particulate filter systems and oxidation catalyst systems. (F, Sp). Prerequisite: Minimum 2.0 in AUTO 221 and Reading Level 3 and Writing Level 2 and Math Level 3. Course Note: Students need to bring their own safety glasses and dress in appropriate work clothes to start working in the lab on the first day of class.
AUTO241	Adv. Computer System Diagnosis	5	This course is designed to complete the study of powertrain management as well as the relationship with other computerized systems (Body control, HVAC, Stability, ABS, and others) and the powertrain computer. Students will take NATEF's National Automotive Student Skills Standards Assessment certification test upon completion of course. (Sp). Prerequisite: Minimum 2.0 in AUTO 221 and Reading Level 3 and Writing Level 2 and Math Level 3. Course Note: Students need to bring their own safety glasses and dress in appropriate work clothes to start working in the lab on the first day of class.
AUTO260	Intro to Alternative Fuels	2	Students will use various sources in the alternative fueled vehicle industry to learn what alternative fuels are available. Students will closely examine the technologies involved when using compressed natural gas (CNG) as a fuel for vehicles. (F,Sp, Su). Prerequisite: Minimum 2.0 in (AUTO 130 and AUTO 221 (formerly AUTO 215)). Course Note: Students need to bring their own safety glasses and dress in appropriate work clothes to start working in the lab on the first day of class.
AUTO263	Electric/Fuel Cell Technology	2	This course is designed to help prepare the student to enter the automotive repair and service industry in the area of alternative fuels and advanced technology vehicles. It is an intensive study of vehicle electric and fuel cell theory, application, installation, diagnosis, service and safety regulations. (F,Sp). Prerequisite: Minimum 2.0 in (AUTO 111 and AUTO 112 and AUTO 113 and AUTO 260).
AUTO264	Gaseous Fuels	3	This course is designed to help prepare the student to enter the auto repair and service industry in the area of alternative fuels and advanced technology vehicles. It is an intensive study of three gaseous fuels - natural gas, propane and hydrogen. Theory, application, installation, diagnosis and safety regulations will be covered. (F,Sp). Prerequisite: Minimum 2.0 in (AUTO 111 and AUTO 112 and AUTO 113 and AUTO 260).
AUTO265	Hybrid Vehicle Technology	2	This course covers the fundamentals of hybrid vehicle technology. The course is intended to give the student an understanding of the types of hybrid vehicles, hybrid vehicle components, how hybrid vehicles operate and basic service procedures; this will enable the student to obtain employment as an advanced technology vehicle technician. (F,Sp). Prerequisite: Minimum 2.0 in (AUTO 111 and AUTO 112 and AUTO 113 and (AUTO 260 or concurrently)).
AUTO266	Hydrogen Application & Safety	2	This course will give the student an understanding of the properties of hydrogen, it's use as a fuel for internal combustion engines and fuel cells, and the storage, transportation and safety considerations, enabling the student to obtain employment as an alternative fuel or advanced technology vehicle technician. (F,Sp). Prerequisite: Minimum 2.0 in (AUTO 264 or concurrently) and Reading Level 3 and Writing Level 2 and Math Level 3.
AUTO279	Dynamometer	5	This course provides an introduction to the purpose, operation, and safety requirements for using an engine dynamometer as an evaluation tool. Students will use specialized equipment, to racing industry accepted specifications, to generate and analyze dynamometer data. (F,Sp). Prerequisite: Minimum 2.0 in AUTO 221 (formerly AUTO 215). Course Note: Students need to bring their own safety glasses and dress in appropriate work clothes to start working in the lab on the first day of class.
AUTO280	Automotive Service Laboratory	4 to 6	This laboratory course is designed to provide work experience and develop trade-entry skills in general and light-line repair. (Su). Prerequisite: Department Approval.

COURSE	TITLE	CREDIT HOURS	TEXT
AUTO285	Automotive Internship	2	Students are able to earn credits while employed as a technician in auto mechanics or auto body. The program coordinator must approve the training station and working conditions. (F,Sp,Su). Prerequisite: Department Approval.
AUTO286	Automotive Independent Study	1 to 4	Special research projects and/or individual readings are used to apply personal and professional experience to the academic area of interest. A presentation or written report is required at the end of the project. (F,Sp,Su). Prerequisite: Department Approval.
AVAF125	Aircraft Systems I	2	The study of fuel management, transfer, defueling and fuel pump systems. The course covers the procedures used to inspect, check, service, troubleshoot and repair aircraft fuel systems and fuel system components. Course material emphasizes fluid quantity indicating, fluid pressure and warning systems. (Sp). Prerequisite: Department Approval.
AVAF126	Aircraft Systems II	6	This course covers the study, analysis and repair of aircraft landing gear and brake systems and their related warning systems. It also includes the study, inspection, servicing and repair of aircraft hydraulic and pneumatic systems and their related components. (Sp). Prerequisite: Department Approval.
AVAF127	Aircraft Systems III	3	This course covers the inspection, checking, troubleshooting, servicing and repair of aircraft heating, cooling, air-conditioning, pressurization, oxygen, ice and rain control, and fire protection systems. (Su). Prerequisite: Department Approval.
AVAF134	Aircraft Instruments	2	This course covers inspection, checking, servicing, troubleshooting, repair of electronic flight instrument systems, both mechanical and electrical speed, altitude, temperature, pressure and flow instrument systems. Also, special removal and installation techniques applicable to aircraft instruments are included. (Su). Prerequisite: Department Approval.
AVAF208	Aircraft Structures I	4	This course introduces the procedures for identification, inspection, testing and repairing of wood, fabric-covered and sheet metal aircraft. The installation and removal of conventional rivets, forming of aircraft sheet metal, installation of special rivets and fasteners, and an introduction to applying finishing materials will also be covered. (Sp). Prerequisite: Department Approval.
AVAF209	Aircraft Structures II	4	This course covers assembly and rigging of fixed wing and rotary wing aircraft control structures. It provides practical application in removal, installation and adjustment of flight controls by balancing, cable tension and motion studies. Aircraft inspection procedures to insure conformity with flight safety standards will be included. (F). Prerequisite: Department Approval.
AVAF210	Aircraft Structures III	4	An advanced course covering inspection, repair, layout, bending and assembly of aircraft sheet metal. Inspection, testing and repair of fiberglass, plastics, honeycomb, composite and laminated structures are practiced. Installation and removal of special fasteners for bonded and composite structures and servicing of aircraft windows, doors and interior furnishings is included. (F). Prerequisite: Department Approval.
AVAF211	Aircraft Electrical I	4	An intermediate aviation electrical course concentrating on theory, calculation and measurement of A.C. electrical systems. Includes reading and interpreting aircraft electrical circuit diagrams, including those with solid-state devices and logic functions. The installation, checking and servicing of airframe and engine wiring, controls, switches, indicators and protective devices are also covered. (Sp). Prerequisite: Department Approval.
AVAF212	Aircraft Electrical II	4	Repair of airframe and engine electrical system components with an emphasis on the inspection, checking, servicing and repair of alternating and direct current systems. General troubleshooting techniques are practiced with special emphasis on A.C. and D.C. electrical systems. (Su). Prerequisite: Department Approval.
AVAF246	Airframe Certification	1	Study of the Federal Aviation Regulations pertaining to national certification as a licensed airframe mechanic. Includes testing in all required areas of study as a prerequisite to receiving authorization to take the general and airframe national certification test administered by representatives of the Federal Aviation Administration. (F). Prerequisite: Department Approval.
AVEL200	Flight Line Testing	2	A study of the avionics systems found aboard modern aircraft focusing on the flight line testing of such systems as VHF communications, VHF navigation, ADF, radar, autopilots and others. (F). Prerequisite: None.

COURSE	TITLE	CREDIT HOURS	TEXT
AVEL201	Flight Line Testing Lab	1	A practical study of the electronics systems found aboard modern aircraft, focusing on the flight line testing of such systems as VHF communications, VHF navigation, ADF, radar, autopilots and others. (F). Prerequisite: None.
AVGM111	Aviation General I	4	This course is designed to develop the skills and knowledge required to weigh an aircraft and record the appropriate data. It involves mathematical and basic physics principles related to aviation, including aerodynamics, theory of flight, aircraft structural design and simple machines. (F). Prerequisite: Department Approval.
AVGM112	Aviation General II	6	Introduces the Federal Aviation Regulations involving the mechanic's privileges, limitations and related aviation operations. Includes the selection and use of aviation publications, maintenance forms, records, reports, aircraft drawings, graphs and charts, symbols, blueprints and system schematics. Also focuses on aircraft ground operations and servicing of related aircraft systems. (F). Prerequisite: Department Approval.
AVGM113	Aviation General III	4	This initial aviation electrical course offers instruction in basic electrical theory and its aviation application. It includes the calculation and measurement of voltage, current resistance, continuity and power; and the theory, inspection and servicing of aircraft lead-acid and ni-cad batteries; and the construction of a volt-ohm meter. (F). Prerequisite: Department Approval.
AVGM114	Materials and Processes	5	This course covers identification and selection of the appropriate aviation hardware, hand tools, cleaning materials, fluid lines and nondestructive testing methods. Performance of nondestructive testing, precision measurements, aircraft cleaning and corrosion control, fabrication, installation and testing of fluid lines is included. (F). Prerequisite: Department Approval.
AVPP241	Reciprocating Engine	8	Presents the theory and practices used in the removal, inspection, overhaul, service, repair and installation of reciprocating engines. This course also studies the inspection, service, repair and troubleshooting of reciprocating engine lubrication systems. (F). Prerequisite: Department Approval.
AVPP251	Reciprocating Engine Systems	2	This course covers the inspection, servicing, troubleshooting and repair of reciprocating engine cooling and exhaust systems. In addition, the inspection requirements necessary to meet established conformity and standards of airworthiness are studied; and reciprocating engine operations and adjustments are conducted using FAA and maintenance publication procedures. (Sp). Prerequisite: Department Approval.
AVPP253	Reciprocating Ignition Systems	5	This course covers the operation, analysis, inspection, service and repair of reciprocating engine ignition systems and components. This includes magnetos, ignition harnesses, spark plugs and starter systems. (Sp). Prerequisite: Department Approval.
AVPP255	Reciprocating Induction Sys	4	Study and analysis of reciprocating engine fuel systems and components. Includes inspection, checking, servicing, troubleshooting and repair of carburetors, water injection systems, heat exchangers, superchargers, intake and induction manifolds and other engine fuel system components. Also includes carburetor overhaul procedures. (Sp). Prerequisite: Department Approval.
AVPP257	Aircraft Propeller Systems	4	Covers the study, analysis, service and repair of aircraft propellers, systems and controls. Includes propeller synchronizing, ice control, lubrication, balancing, pitch control, repair procedures and removal, and installation of both fixed-pitch and variable-pitch propellers. (Sp). Prerequisite: Department Approval.
AVPP259	Turbine Engine I	4	This course covers the theory of operation and design of the varied turbine engine powerplants and turbine-driven auxiliary power unit types, including the induction and cooling systems of each. (Sp). Prerequisite: Department Approval.
AVPP261	Turbine Engine II	4	This course covers inspection, checking, servicing, repair, removal, installation and troubleshooting of turbine engines and systems. A detailed study of the lubrication system and inspection procedures to insure conformity with FAA specifications and standards are included. (Su). Prerequisite: Department Approval.
AVPP263	Turbine Engine Systems	2	This course is a detailed study of turbine-engine ignition, pneumatic and electric starters, exhaust and thrust reverser, fire detection and protection, fuel metering and electronic fuel control systems and components. Study also includes inspection, checking, servicing, repair and troubleshooting procedures. (Su). Prerequisite: Department Approval.

COURSE	TITLE	CREDIT HOURS	TEXT
AVPP265	Powerplant Instruments	2	This course covers the inspection and repair of turbine and reciprocating engine instruments. Troubleshooting of mechanical/electrical fluid rate-of-flow, temperature, pressure, RPM and airflow indicators will be included. (Su). Prerequisite: Department Approval.
AVPP267	Powerplant Certification	1	Study of the Federal Aviation Regulations pertaining to national certification as a licensed powerplant mechanic. Includes testing in all required areas of study as a prerequisite to receiving authorization to take the powerplant national certification tests administered by representatives of the Federal Aviation Administration. (Su). Prerequisite: Department Approval.
BIOL120	Environmental Science	4	Students will develop an ecological knowledge base to allow them to understand how human actions impact the environment. They will develop applied analytical skills through laboratories, fieldwork, simulations and a discussion of contemporary issues. They will investigate and evaluate basic ecological and environmental issues. (F,Sp,Su). Prerequisite: Reading Level 5 and Writing Level 6.
BIOL121	Biol Foundation for Physiology	4	Topics include atomic structure, chemical bonding, organic molecules, biological molecules, enzymes, metabolism, cell structure and function, passage of materials across membranes, harvesting energy, mitosis, meiosis, and the relationship between DNA, RNA, and protein synthesis. Designed for students preparing for health careers. Recommended prerequisite for BIOL202. (F,Sp,Su). Prerequisite: Reading Level 5 and Writing Level 6 and Math Level 4. Recommended: CHEM 120 or High School Chemistry.
BIOL125	Introductory Biology	4	This is an introductory biology course for non-science majors. Lecture and lab topics include cell theory, evolution, a survey of life, and plant and animal anatomy. Students will analyze scientific data and investigate current biological issues. (F,Sp,S).Prerequisites: Reading Level 5 and Writing Level 6.
BIOL127	Cell Biology	4	Lecture topics include chemistry of carbohydrates, lipids and proteins; structure and function of prokaryotic and eukaryotic cells; biochemistry of respiration and photosynthesis; and genetics and the regulation of gene expression. Laboratory stresses techniques of cell and molecular biology as well as genetics. (F,Sp,Su). Prerequisite: (Minimum 2.0 in CHEM 120) or (Minimum 2.0 in CHEM 151 or concurrently) and Reading Level 5 and Writing Level 6 and Math Level 4.
BIOL128	Organismal Biology	4	This course examines adaptations of organisms to changing environments. Major emphasis is on physiological adaptations, natural selection, and ecology. Lab topics include a survey of the kingdoms, behavior experiments, and field studies. (F,Sp,Su). Prerequisite: Reading Level 5 and Writing Level 6 and Math Level 4.
BIOL145	Intro Anatomy and Physiology	4	An introductory course in human anatomy and physiology which combines lecture and laboratory experiences to provide a basic understanding of the structure and function of body systems. Designed for vocational programs, that include emergency medical technicians, massage therapists, medical technicians, and medical transcriptionists, as well as for non-science majors. (F,Sp,Su). Prerequisite: Reading Level 5 and Writing Level 6 and Math Level 4.
BIOL201	Human Anatomy	4	A lecture and laboratory study of the anatomy of the human body that includes the structures of the skeletal, muscular, nervous, sensory, circulatory, respiratory, digestive, excretory, endocrine, and reproductive systems. Designed for students preparing for health occupations such as nursing, radiologic technology, dental hygiene and surgical technologists. (F,Sp,Su). Prerequisite: (Minimum 2.0 in BIOL 121 or BIOL 127 or CHEM 120 or passing score on Health Biology Proficiency Test) and Reading Level 5 and Writing Level 6 and Math Level 4.
BIOL202	Human Physiology	4	The physiology, regulation, biochemistry, and integration of various organ systems in the human body are presented. Emphasis is on normal function, but appropriate clinical aspects may be discussed. Laboratory topics complement the lecture. Designed for students preparing for health occupations such as nursing, radiologic technology and dental hygiene. (F,Sp,Su). Prerequisite: Minimum 2.0 in BIOL 201 and Reading Level 5 and Writing Level 6 and Math Level 5.
BIOL203	Microbiology	3	An introduction to bacteria, viruses, and other microorganisms as they relate to human health. Emphasis on bacterial and viral structure, life cycles, and genetics; antimicrobial therapy; immunology and host defenses; epidemiology, treatment, and prevention of infectious human diseases. Designed for health career and other science students. (F,Sp,Su). Prerequisite: (Minimum 2.0 in BIOL 121 or BIOL 127 or CHEM 120 or passing score on Health Biology Proficiency Test) and Reading Level 5 and Writing Level 6 and Math Level 4.

COURSE	TITLE	CREDIT HOURS	TEXT
BIOL204	Microbiology Laboratory	1	Basic laboratory principles of microbiology for allied health students. Emphasis on microscopy, aseptic cultivation of microorganisms, differential staining, assays of antimicrobial agents, and diagnostic laboratory techniques. Students will identify unknown bacterial species and examine medically important parasites. (F,Sp,Su). Prerequisite: Minimum 2.0 in BIOL 203 or concurrently.
BIOL210	Natural Resource Conservation	4	This course examines the renewable natural resources and the policies which govern their use in Michigan. Lecture topics include ecology, water, wildlife, forests, and soils. Laboratory investigations include measurement techniques, environmental problem solving and field studies. (F,Sp,Su). Prerequisite: Reading Level 5 and Writing Level 6 and Math Level 4.
BIOL214	Human Anatomy Laboratory	1	A laboratory study of the anatomy of the human body that includes the structures of the integumentary, skeletal, muscular, nervous, cardiovascular, respiratory, digestive, urinary, endocrine, and reproductive systems. Intended primarily for students who have had anatomy coursework that did not include a laboratory component. Designed for students preparing for health occupations or for those reviewing/refreshing their anatomical knowledge. (F,Sp,Su). Prerequisite: (Minimum 2.0 in BIOL 121 or BIOL 127 or CHEM 120 or passing score on Health Biology Proficiency Test) and Reading Level 5 and Writing Level 6 and Math Level 4. Course Note: This course may serve as a co-requisite for BIOL 202 if transfer credit for a non-laboratory based anatomy class otherwise equivalent to BIOL 201 has been completed. Contact the Science Department for details at (517) 483-1092.
BIOL229	Nature Study for Educators	4	A general biology course for educators and education majors on integrated understanding of the natural world, including the biotic and abiotic components comprising three typical mid-Michigan environmental communities: an aquatic, a forest, and a field community. (F,Sp,Su). Prerequisite: Reading Level 5 and Writing Level 6 and Math Level 4. Recommended: ISCI 122.
BIOL229A	Nature Study for Educ: Forest	1	A general biology course for educators and education majors on integrated understanding of the natural world, including the biotic and abiotic components comprising a typical mid-Michigan forest environmental community. (Su). Prerequisite: Reading Level 5 and Writing Level 6 and Math Level 4 and Department Approval. Recommended: ISCI 122.
BIOL229B	Nature Study for Educ:Aquatics	1	A general biology course for educators and education majors on integrated understanding of the natural world, including the biotic and abiotic components comprising a typical mid-Michigan aquatic environmental community. (Su). Prerequisite: Reading Level 5 and Writing Level 6 and Math Level 4 and Department Approval. Recommended: ISCI 122.
BIOL229C	Nature Study for Edu:Open Field	1	A general biology course for educators and education majors on integrated understanding of the natural world, including the biotic and abiotic components comprising a typical mid-Michigan open field environmental community. (Su). Prerequisite: Reading Level 5 and Writing Level 6 and Math Level 4 and Department Approval. Recommended: ISCI 122.
BIOL229D	Nature Study for Ed:Integration	1	A general biology course for educators and education majors on integrated understanding of the natural world, including the biotic and abiotic components comprising three typical mid-Michigan environmental communities: an aquatic, a forest, and a field community. (Su). Prerequisite: Reading Level 5 and Writing Level 6 and Math Level 4 and Department Approval. Recommended: ISCI 122.
BIOL260	Botany	4	An introduction to the study of plants that includes structure and function, development, and ecology. Emphasis will be placed on the diversity, adaptations, and life cycles of major plant groups. Laboratory will complement the basic concepts with emphasis on physiology, systematics, and species of value to medicine and agriculture. (F). Prerequisite: Reading Level 5 and Writing Level 6. Recommended: One semester of college-level biology.
BIOL265	Zoology	4	Topics include principles of taxonomy; early animal development; the diversity of animal body plans; and protozoan biology. Course deals principally with taxonomy, early development, and comparative anatomy of members within the animal phyla and classes. Groups are surveyed in a phylogenetic approach. (Sp). Prerequisite: Reading Level 5 and Writing Level 6 and Math Level 4. Recommended: One semester of college-level biology.
BIOL270	Human Genetics	3	Presents general principles of genetics with specific human application. Topics include Mendelian genetics, mitosis and meiosis, chromosome structure and aberrations, sex determination and x-linkage, molecular basis of inheritance, gene mutations, genetics of immune system, cancer genes, recombinant DNA technology, and genetic screening and counseling. (Sp). Prerequisite: Reading Level 5 and Writing Level 6 and Math Level 4. Recommended: One semester of college-level biology.
BIOL275	Molecular Biology I	4	Introduces principles of molecular biology, DNA/RNA structure, function and replication, Polymerase Chain Reaction, and recombinant DNA technology. Laboratory emphasizes reagent preparation, culturing bacteria, isolating and purifying bacterial and plasmid DNA, restriction enzyme digests, and agarose gel electrophoresis analysis. Field trip to research laboratories. Designed for Laboratory Technicians. (F). Prerequisite: Minimum 2.0 in (BIOL 127 and CHEM 151 and CHEM 161) and Reading Level 5 and Writing Level 6 and Math Level 4.

COURSE	TITLE	CREDIT HOURS	TEXT
BIOL276	Molecular Biology II	4	Continuation of BIOL275. Advanced lecture topics in bacteriophage biology, gene analysis, gene sequencing, and applications of molecular biotechnology. Gene cloning experiments with lambda bacteriophage and plasmid vectors, Southern hybridizations, and construction of a genomic library of lambda phage DNA. Designed for Laboratory Technicians. (Sp). Prerequisite: Minimum 2.0 in BIOL 275 and Reading Level 5 and Writing Level 6 and Math Level 4.
BIOL287	Tropical Aquatic Systems	4	This course combines a classroom lecture series with a 10-day field study in Puerto Rico. Students will study tropical aquatic systems including forested streams, tide pools, urban waterways, and coral reefs. Evaluation will be based on lecture tests, journals, and the development and completion of individual research projects. (F). Prerequisite: Reading Level 5 and Writing Level 6 and Math Level 4. Recommended: College-level biology or chemistry. Course Note: A 10-day field study trip to Puerto Rico is a required part of this course. The cost of the trip is approximately \$2,000. Tuition and fees are charged separately from the trip cost. Please contact the Science Department at 483-1092 for more information.
BLDR112	Wood Projects Lab	0.75	This class is designed to offer students the opportunity to work on their own woodworking projects. The tools and equipment in the shop are available for student use. The instructor is available to help with the use of tools and to assist with their projects. (Su). Prerequisite: None. Recommended: Previous woodworking experience. Course Note: Cost of these seminars is \$***. If you have any questions, call Community and Continuing Education at (517)483-1860.
BLDR144	Build Your Own Home	1.5	This course is designed for students who wish to build their own homes. Included are design considerations, land acquisition, selection of materials, choosing contractors, scheduling of work, financing, and landscaping. Guest speakers, who are experts in their various fields, provide the instruction. (F,Sp,Su). Prerequisite: None. Course Note: Cost of these seminars is \$***. If you have any questions, call Community and Continuing Education at (517)483-1860.
BLDT100	Introduction to Construction	3	This course covers basic concepts of construction; including city and regional planning, managing, contracting, designing, engineering, estimating, bidding and inspecting; as well as the production work normally associated with construction. (F). Prerequisite: None.
BLDT101	Basic Woodworking	2	An introductory course designed for students with little or no experience with woodworking. Students will learn hand and portable power tools, joint construction, fastening methods, woodworking techniques and procedures, and wood finishing techniques. Reviews basic wood harvesting and characteristics through project design, hands-on activities and capped with an individual student project. (F,Sp). Prerequisite: None.
BLDT103	Structural Blueprint Reading	4	This course covers symbols, conventions and abbreviations used in structural blueprints. The student will be able to recognize conventions and verbally describe their interpretation in trade or lay terms according to standard architectural practices. Residential and commercial prints are used to show the relationship between working drawings and specifications. (F,Sp,Su). Prerequisite: None.
BLDT121	Residential Framing	4	Students will learn to frame residential buildings using accepted framing techniques; such as framing member spacing, framing floor systems, interior and exterior walls, ceilings, roofs and stairs. Various types of foundations and the advantages and disadvantages of each are covered. Hands-on methods are used. (F,Sp,Su). Prerequisite: None.
BLDT121A	Preparing to Build	0.75	The Preparing to Build module presents information on many of the considerations necessary to begin framing a residence. Topics include information on building codes, blueprints, and lumber and wood products. (F,Sp,Su). Prerequisite: None.
BLDT121B	Bldg Residential Foundations	0.25	Because of its strength, resistance to damage, and formability, concrete is a good option for use in the building industry. The Building Residential Foundations module presents information on the components used in concrete, working with concrete, and methods to reinforce concrete in building. (F,Sp,Su). Prerequisite: None.
BLDT121C	Floor Framing	0.75	The Floor Framing module presents information and hands-on experience in laying out and manufacturing the flooring component of a structure. Participants will layout and install flooring members and subflooring for a structure. (F,Sp,Su). Prerequisite: None.

COURSE	TITLE	CREDIT HOURS	TEXT
BLDT121D	Wall Framing and Sheathing	0.75	This module provides instruction and hands-on experience laying out and framing walls using wood products. Topics include wall member layout, nailing, and sheathing, the use of steel framing members, and the considerations needed to use non-wood building materials. Students will have a limited hands-on installation experience of steel framing. (F,Sp,Su). Prerequisite: None.
BLDT121E	Roof Construction	1	The Roof Construction module provides detail about roofing framing, types of rafters that can be constructed, assembly, and types of sheathing available. (F,Sp,Su). Prerequisite: None.
BLDT121F	Stairway Construction	0.25	This module focuses on the layout and construction of residential stairways. Participants will learn about building codes related to stairway construction and will layout a stringer and install treads to complete the stairs. (F,Sp,Su). Prerequisite: None.
BLDT121G	Install Exterior Doors/Windows	0.25	This module focuses on the selection and installation of exterior doors and windows (not interior doors) and presents information on window and door type selection, installation, and time and cost estimating. (F,Sp,Su). Prerequisite: None.
BLDT123	Remodeling	4	Building on existing construction skills and knowledge, this course teaches students how to approach a residential remodeling project. Subjects covered include analyses of existing structures, design, estimating, problem solving, building practices, materials, and installation methods for various types of remodeling projects. (Sp). Prerequisite: Minimum 2.0 in BLDT 121 or concurrently.
BLDT125	Roofing and Siding	4	Students will learn how to install different roofing and siding materials. This course covers analysis, design, estimating, problem solving, building practices, materials, and installation methods for roofing and exterior wall covering projects. (Sp). Prerequisite: Minimum 2.0 in BLDT 121 or concurrently.
BLDT126	Interior Carpentry	4	Students will learn to finish the interior of a residential building. This course covers the materials, installation practices and material takeoff to do the finish carpentry for a house to include windows, doors, base, chair rail, wood floors, stairs, simple built-ins and cabinets. (F). Prerequisite: Minimum 1.0 in BLDT 121 or concurrently.
BLDT132	General Home Maintenance	2	This is an introductory course in general home maintenance. Areas to be covered will include basic tools, electrical, plumbing, framing, roofing, interior trim, drywall and painting, appliance maintenance and repair, and concrete flatwork and blocklaying. (F,Sp,Su). Prerequisite: None.
BLDT150	Intro Masonry/Concrete Const	4	This course introduces the basic properties and practices of concrete construction and masonry construction. Upon completion of this course, students will have the knowledge and skills necessary to take the ACI (American Concrete Institute) certification exam for Flatwork Technician. (F, Sp). Prerequisite: Reading Level 4 and Math Level 3.
BLDT160	Steel Framing	4	Students will learn commercial metal stud framing, step-by-step methods to master high-speed metal framing, and learn about new tools, materials and equipment. Students will be introduced to technical and practical experience with light gauge stud design and standards. (F, Sp). Prerequisite: Reading Level 4 and Math Level 3. Recommended: BLDT 121 or concurrently.
BLDT170	Special Topics in Construction	.25 to 8	This course offers students the opportunity to learn new or advanced skills in residential building, woodworking, or other construction-related topics. Specific content may vary with each offering and will be related to the Residential Building program and profession. (F,Sp,Su). Prerequisite: Determined by Section.
BLDT171	Special Topic/Construction P/Z	.25 to 8	This course offers students the opportunity to learn new or advanced skills in residential building, woodworking, or other construction-related topics. Specific content may vary with each offering and will be related to the Residential Building program and profession. This course will be graded on a Pass/Fail basis. (F, Sp, Su). Prerequisite: Determined by Section.
BLDT262	Builder's Business License	4	This course covers the principles of residential builder organizations and business practices, along with other useful information to help students pass the State of Michigan Builder's License Exam. Preparation for a residential project from planning to actual construction and sale of the project is covered. (Sp). Prerequisite: None.
BLDT277	Construction Cost Estimating	4	Students will learn to do a structural material takeoff and a complete estimate for residential and light commercial buildings. The course uses standard estimating practices to estimate the cost of buildings based on detailed blueprints. (F,Sp). Prerequisite: Minimum 2.0 in (BLDT 103 or (ARCH 100 or Architectural Drafting Placement Test 80%) or concurrently).

COURSE	TITLE	CREDIT HOURS	TEXT
BLDT281	Mich Residential & Bldg Codes	3	Students will be introduced to the Michigan Residential Code and the Michigan Building Code. This course will emphasize the interpretation and application of the Michigan Residential Code and the Michigan Building Code. Requirements for materials, barrier-free design and fire standards for residential and commercial construction will also be emphasized. (F,Sp,Su). Prerequisite: None.
BLDT285	Residential Bldg Internship	2	This course offers students the opportunity to work for a residential builder in an actual job situation. The students can gain experience working with tools used in the industry and applying what they learned in the classroom and laboratory. (F,Sp,Su). Prerequisite: Minimum 1.0 in BLDT 121 and Department Approval. Restriction: Residential Building Majors.
BLDT296	Ceramic Tile Seminar	0.5	This seminar will teach the basic principles for installation of ceramic tile. This includes the selection of types of tile, how to lay out the tile, preparation of the surface, care of tools used, and estimation of labor and materials. (F,Sp). Prerequisite: None. Course Note: Cost of these seminars is \$***. If you have any questions, call Community and Continuing Education at (517)483-1860.
BLDT298	Builder's License Review	1	This is a two-day workshop designed to prepare individuals for the State of Michigan Residential Builder's Examination. This workshop will include concentrated instruction in blueprint reading, state regulations, building terms, basic math, and construction codes. (F,Sp,Su). Prerequisite: None.
BSEM100	Business Related Seminar	.25 to 5	This course will cover a variety of topics in business related fields. For individuals already employed in the environment seeking to upgrade their skills or anyone looking to be employed in a particular career field. (F,Sp,Su). Prerequisite: None.
BUSN101	Business Special Topics	1 to 3	This course explores special topics and current issues, as well as knowledge, skills, attitudes and/or behaviors relevant to the professional development of business students and professionals. (F,Sp,Su). Prerequisite: None.
BUSN118	Introduction to Business	3	Introduces students to principles, problems, and practices related to the world of business. Topics covered include business management and organization, marketing, finance, economics, production, and international business. (F,Sp,Su). Prerequisite: Reading Level 5 and Writing Level 4.
BUSN160	Starting a Business	4	This course will introduce students to the world of entrepreneurs and their role in small business. There will be an emphasis on building a "business" which will include the elements of entrepreneurship, management, marketing and finance. The Internet will be used as a resource and many real-life cases will be studied. (F,Sp). Prerequisite: Reading Level 5 and Writing Level 4 and Math Level 4.
BUSN161	Writing a Business Plan	2	The focus of this course is on writing a business plan. Students will develop a realistic business plan which includes the marketing plan and financial plan. The successful plan will be clear and concise and incorporate the mission, goals, objectives and implementation strategies of the business as outlined and presented in the course text. (F,Sp). Prerequisite: Minimum 3.0 in BUSN 160 and Reading Level 5 and Writing Level 6 and Math Level 4.
BUSN191	Independent Study in Business	1 to 3	Students are allowed to undertake special research projects and/or individual readings to apply personal and professional experience to academic area of interest. Minimum of 16 hours work per credit required, plus completion of written project report. (F,Sp,Su). Prerequisite: Department Approval.
BUSN201	International Business	3	Overview of international business: organizational, social, cultural, and economic variables that create change in the international marketplace. Includes exchange rates, resource allocation, import quotas and export controls, balance of payments, and free trade versus protectionism. (F,Sp,Su). Prerequisite: Reading Level 5 and Writing Level 4. Recommended: BUSN 118.
BUSN250	Personal Finance	3	Provides a broad survey of topics including budgeting, smart shopping, buying a car, renting, buying or selling a home, credit requirements, investing, insurance, and estate and retirement planning. Not intended to be a financial planning course, but students will develop a fundamental knowledge of financial concerns. (F,Sp). Prerequisite: Reading Level 5 and Writing Level 4.
BUSN251	Stock Market Essentials	3	Study of securities market to give framework with which to set investment goals and achieve desired results. Introduction to some of the more prevalent theories, concepts, and skills to aid in developing strategies and making sound investment decisions related to the stock market. (F,Sp). Prerequisite: Reading Level 5 and Writing Level 4.

COURSE	TITLE	CREDIT HOURS	TEXT
BUSN254	Introduction to Investments	2	This course covers the fundamental principles of investing and its role in our economy. Emphasis will be on developing terminology, types of investments, and personal financial planning such as mutual funds, real estate, CDs, money market funds, limited partnerships, insurance, IRAs, stock, and tax shelters. This is an overview course. (F,Sp). Prerequisite: Reading Level 5 and Writing Level 4.
BUSN295	Entrepreneurial Capstone	2	This capstone course offers practical work on small business operations, including business and managerial functions, environment, financial, marketing, legal and governmental relationships. Editing, revising, and finalizing the business plan prepares the student for seeking funding, obtaining credit from suppliers, and achieving goals and objectives. (F,Sp). Prerequisite: Minimum 2.0 in BUSN 161 and Reading Level 5 and Writing Level 6 and Math Level 4.
CABS100	Computer Related Seminars	.25 to 1	CABS 100 seminars are designed for anyone who wants to learn software but doesn't need mastery-level proficiency. The cost includes a textbook and exercise cd. Windows experience recommended for all seminars except "Computers for Beginners and Maintaining Your Computer". Office 2007 versions of software used in all other classes. (F,Sp,Su). Prerequisite: None. Course Note: Cost for each .25 credit seminar is \$74 and each 1 credit seminar is \$129. Online CABS 100 offerings use the standard college refunding rules. CAMW self-paced CABS 100 offerings use the college Open Entry refunding rules. All other CABS 100 offerings follow the Community and Continuing Education refund rules. If you have any questions, call Community and Continuing Education at (517)483-1860.
CHDV100	Foundations Early Childhood Ed	3	This course provides a broad view of essential elements in early childhood education and care including the role of the early childhood education professional. Topics include elements of quality, providing a supportive emotional environment, influences on children's learning including family and culture, and the importance of matching curriculum to development. (F,Sp,Su). Prerequisite: Reading Level 4 and Writing Level 4. Recommended: Child Development and Early Education Major. Course Note: An online course may require students to travel to an exam site for proctored exams. If you live at least 60 miles from LCC's Main Campus you may request to test at an approved proctored location (additional fees may apply). For additional information please visit https://www.lcc.edu/services/testing/
CHDV101	Child Growth/Develop: 0-10 Yrs	4	This course examines the growth and development patterns of children up through age ten in physical, social, emotional, cognitive and language development. This includes the influences of health, play, families, the early childhood education experience, and other environmental factors which impact development. Students acquire skills in observing and recording child behavior. (F,Sp,Su). Prerequisite: Reading Level 5 and Writing Level 4.
CHDV111	Child Guidance/Communication	4	This course, which includes field work, examines interaction skills and environmental structures which foster social and emotional growth in children in early childhood education and care settings. Topics include positive guidance and discipline, effective communication with children, problem solving, and social skill development. (F,Sp). Prerequisite: Minimum 2.5 in CHDV 100 or concurrently and Reading Level 4 and Writing Level 4.
CHDV112	Fam Relation/Early Child Prog	3	This course examines approaches to establish and maintain positive and supportive relationships with families in early education/care programs. The focus includes supporting the child's relationship with his/her family, understanding the complex strengths and diversity of families, developing respectful communication strategies, and recognizing professional responsibilities. (F,Sp). Prerequisite: Minimum 2.5 in (CHDV 100 and CHDV 111) and Reading Level 5 and Writing Level 6.
CHDV113	Health/Safety:Early Child Prog	2	Examines health and safety issues in early education and care programs. In this context, the focus is on planning strategies and best practices in areas such as prevention/management of communicable diseases, management of allergies and chronic illnesses, nutrition, playgrounds, procedures for handling emergencies and other health/safety issues. (Sp). Prerequisite: Reading Level 4 and Writing Level 4. Recommended: Child Development and Early Education Major.
CHDV120	Curr: Phys Dev/Early Childhood	1	This course examines curriculum and activities which enhance the development of physical and motor skills of children in early childhood programs. It includes specific information on developmentally appropriate activities for fine motor, gross motor, and sensory development for a variety of ages. Seminar format is used. (F). Prerequisite: None. Recommended: Reading Level 4 and Writing Level 4.
CHDV121	Curr:Cognitive Dev/Early Child	1	This course examines the theoretical foundations of cognitive development of young children and their impact on curriculum development in early childhood programs. Students will explore curriculum, including classroom materials, activities, and effective teaching strategies that support children's cognitive development. Seminar format used. (Su). Prerequisite: None. Recommended: Reading Level 4 and Writing Level 4.

COURSE	TITLE	CREDIT HOURS	TEXT
CHDV122	Curr: Creative Dev/Early Child	1	This course examines curriculum and activities which enhance the creative development of children in early childhood education and care programs. Specific information on activities in the areas of art, music, creative, and dramatic play with a variety of materials are shared. Seminar format is used. (Sp). Prerequisite: None. Recommended: Reading Level 4 and Writing Level 4.
CHDV123	Curr: Early Child Literacy	1	This course examines curriculum which enhances the acquisition of foundational concepts about literacy for children, birth through age five, in early education and care settings. Focus is on developmentally appropriate experiences, strategies and environment that support language development, emergent reading and emergent writing. Seminar format is used. (Su). Prerequisite: None. Recommended: Reading Level 4 and Writing Level 4.
CHDV124	Curr: Math in Early Childhood	1	This course examines curriculum which enhances interest in, and development of, math skills, concepts and awareness in early education and care settings for preschoolers. Focus is on developmentally appropriate strategies, environments and experiences which promote basic math concepts including number, measurement, shape, data analysis, problem solving and patterns. Seminar format is used. (F). Prerequisite: Reading Level 4 and Writing Level 4. Recommended: Experience in Early Childhood Education and Care.
CHDV125	Curriculum: Preschool Science	1	This course discusses basic beliefs about science education with young children. Through hands-on activities, students investigate experiences, explorations, and activities for preschool children, where scientific processes are demonstrated. Appropriate questioning techniques, environments, and ways to integrate science into daily routines and other aspects of the curriculum are explored. Seminar format is used. (Sp). Prerequisite: None. Recommended: Reading Level 4 and Writing Level 4.
CHDV126	Discovery Learning for Inf/Tod	1	Students will examine infant and toddler curriculum opportunities that support children's natural curiosity and exploration, and enhance their discoveries. Students will participate in practical learning experiences to develop teaching strategies designed to enhance the developmental levels and learning styles of infants and toddlers. (Su). Prerequisite: None. Recommended: Reading Level 4 and Writing Level 4.
CHDV127	Understand Inf/Tod Behavior	1	This seminar provides practical learning experiences that focus on individual differences, development and temperament as a way to recognize and effectively respond to children's behavior. Nurturing relationships and caregiver responsiveness to infants and toddlers are emphasized as a foundation for all learning and as an important influence on social-emotional development. (Sp). Prerequisite: None. Recommended: Reading Level 4 and Writing Level 4.
CHDV128	Partnerships in Inf/Tod Care	1	This seminar explores strategies for creating infant toddler care and education environments that support partnerships, with families, colleagues, and ancillary professionals, as a means for supporting children's development. A sensitive, attentive approach to inclusion issues, including culture, language, developmental delays and disabilities, as a foundation for effective partnerships is emphasized. (F). Prerequisite: None. Recommended: Reading Level 4 and Writing Level 4.
CHDV130	Intro Early Education and Care	1	This course introduces factors related to quality early education in various settings. Topics include: child growth and development; safety, health and nutrition; physical environments; appropriate materials; positive guidance and discipline skills; the parenting role and supporting families; components of high quality early education and care; and professionalism. (F). Prerequisite: None.
CHDV131	Family Child Care Management	2	This course presents a systematic approach to managing a family child care home and creating a positive learning environment for young children in a home setting. Topics include business aspects, program development, professionalism, managing personnel, and organizing the environment. (F). Prerequisite: Reading Level 4 and Writing Level 4.
CHDV181	Adult Comm/Early Child Prog	1	This course examines effective adult-adult communication (both staff-staff and staff-parent) in early childhood education and care programs. Topics include personal communication style, challenging situations, and effective strategies to improve communication, problem-solving and team building. Seminar format is used. (Sp). Prerequisite: Reading Level 4 and Writing Level 4. Recommended: Experience in Early Childhood Program.
CHDV184	Children and Stress	1	This course examines stress as it relates to children. Specific topics include symptoms and causes of stress, situations which are stressful for children, ways to help children cope with stress, and techniques for reducing stress. Divorce and death are among topics discussed. Seminar format is used. (F,Sp,Su). Prerequisite: Reading Level 4 and Writing Level 4.
CHDV185	Preventing Child Sexual Abuse	1	This course explores preventing child sexual abuse through teaching personal safety to children. Topics include the sexually abusive situation, behavioral indicators, legal mandates, reporting protocol and appropriate adult responses. It emphasizes appropriate ways of teaching personal safety to children, selecting personal safety materials, and adult concerns when teaching it. Seminar format is used. (Sp). Prerequisite: None. Recommended: Reading Level 4 and Writing Level 4.

COURSE	TITLE	CREDIT HOURS	TEXT
CHDV186	Child Self-Esteem/Positive Dis	1	This course looks at children's self-esteem: what it is, where it comes from, and how it can be fostered in both home and early education settings. It focuses on practical suggestions and teaches positive guidance and discipline techniques that build self-esteem. Seminar format is used. (F,Sp,Su). Prerequisite: None. Recommended: Reading Level 4 and Writing Level 4.
CHDV188	Inclusion:Erly Ch Special Need	2	This course focuses on inclusive practices for young children with disabilities and/or developmental delays, and their families, in early education and care programs. The course addresses current systems of assessment and diagnosis, services children and families may be involved in, and the role of the early childhood education and care professional. (Su). Prerequisite: Reading Level 4 and Writing Level 4.
CHDV189	Help Children Value Diversity	1	This course explores how early education and care programs can promote diversity and encourage cultural competence through embracing similarities and differences. Topics include identity formation, bias, cultural awareness and integrating diversity into the program and curriculum. Seminar format is used. (F). Prerequisite: None. Recommended: Reading Level 4 and Writing Level 4.
CHDV196	Child Develop Special Topic	.25 to 4	This course explores recently identified current issues, knowledge, skills and/or attitudes in the field of early childhood education and care. (F,Sp,Su). Prerequisite: Determined by Section.
CHDV197	Child Develop Special Topic	.25 to 4	This course explores recently identified current issues, knowledge, skills and/or attitudes in the field of early childhood education and care. (F,Sp,Su). Prerequisite: Determined by Section.
CHDV220	Preschool Curr/Learn Environ	4	This course, with field work, explores developmentally appropriate programming which promotes physical, cognitive, language, literacy, and creative development in preschool-age early education and care settings. Emphasis is on active involvement of children in concrete experiences. Other topics include learning environments, materials and equipment, learning goals, and observation and assessment skills. (F,Sp). Prerequisite: Minimum 2.5 in (CHDV 100 and CHDV 101 and CHDV 111).
CHDV221	Infant-Toddler Prog Develop	4	This course, which includes field work, explores physical and emotional environments needed for quality early education and care for infants and toddlers. Focus includes developing nurturing skills, developmentally appropriate activities and materials, managing schedules and routines, and observation skills. (F,Sp). Prerequisite: Minimum 2.5 in (CHDV 100 and CHDV 101 and CHDV 111).
CHDV222	School-Age: Out of School Care	2	This course examines the developmentally appropriate programming for school-aged children in out-of-school-time programs. Content includes appropriate equipment and activities, environment and program structure, and individual and group management. (F). Prerequisite: Minimum 2.5 in CHDV 101.
CHDV230	Early Childhood Center Admin	3	This course examines the administrative role in managing an early childhood education and care program. The focus is on providing a safe, healthy environment; developing effective leadership and management strategies; meeting professional standards and advocacy; and effective communication techniques. (F,Sp). Prerequisite: Minimum 2.5 in (CHDV 220 or CHDV 221) and Writing Level 6.
CHDV240	Behavior Challenges:Erly Ch Ed	2	Responding effectively to young children when they engage in behavior that challenges the adults who care for them requires developmentally appropriate guidance techniques. Most challenging behavior is developmental, and early childhood education is family focused, so interventions must address relationships, environment and curriculum, positive behavioral support and effective use of external consultation. (Sp). Prerequisite: Minimum 2.5 in CHDV 111 and Reading Level 5 and Writing Level 4. Recommended: Experience in an early childhood education program.
CHDV251	CDA Credential Prep/Fieldwork	2	This course, and accompanying field work, examines credentialing procedures and competency standards for the Child Development Associate (CDA) Credentialing Assessment. Students complete the resource file, are observed using the CDA observation instrument, and prepare for the CDA situational assessment. (Sp). Prerequisite: Minimum 2.5 in CHDV 111 and (CHDV 220 or CHDV 221) and Department Approval. Recommended: Employed or volunteer 8+ hrs/week in approved regulated child care program.
CHDV251A	CDA Credential Assessment Prep	1	This course examines credentialing procedures and competency standards for the Child Development Associate (CDA) Credentialing Assessment. Students complete the resource file and prepare for the Verification Visit of the CDA Council Representative. Content of the course also covers the CDA formal education requirements: "Maintaining a commitment to professionalism." (Sp). Prerequisite: Minimum 2.5 in CHDV 111 and (CHDV 220 or CHDV 221) and Department Approval. Recommended: Employed or volunteer 8+ hrs/week in approved regulated child care program.

COURSE	TITLE	CREDIT HOURS	TEXT
CHDV251C	CDA Practicum	1	This course is the field work required for completion of the CDA Assessment Observation Instrument by a CDA Advisor who meets the CDA eligibility requirements. The CDA competency standards for the Child Development Associate (CDA) Credentialing Assessment are applied in the field with children 0-5 years old and the student is assessed using the CDA tool. (Sp). Prerequisite: Minimum 2.5 in CHDV 111 and (CHDV 220 or CHDV 221) and Department Approval. Recommended: Employed or volunteer 8+ hrs/week in approved regulated child care program.
CHDV284	Early Childhood Practicum	6	A capstone supervised field experience in an early education and care program. Students plan and implement an environment and curriculum that are healthy, respectful, and challenging for children. Authentic assessment is used in planning for individuals. Accompanying seminar explores the teacher's role in planning, goal-setting, evaluation, family relationships, and professionalism. (Sp). Prerequisite: Minimum 2.5 in CHDV 220 and CHDV 221 and (CHDV 112 or concurrently) and Writing Level 6 and Department Approval.
CHDV297	Child Development Indep Study	.25 to 4	This course includes special research, directed study, or service-learning projects in child development. It requires at least 16 hours of independent work for each credit. A learning contract specifying objectives, activities, and outcomes is required. (F,Sp,Su). Prerequisite: Department Approval.
CHEM120	Gen Organic & Biological Chem	4	Introduces topics in general, organic, and biological chemistry that are used in health-related occupations. Included are scientific measurement, atomic structure and bonding, chemical equations and stoichiometry, solutions, acids, bases, buffers, gas behavior, nuclear radiation, organic functional groups, and the biologically important compounds: carbohydrates, lipids, and proteins. (F,Sp,Su). Prerequisite: Reading Level 5 and Writing Level 4 and Math Level 4.
CHEM125	Basic Chemistry	4	Intended for students who have not had high school chemistry or who require a refresher course. Measurement, problem solving, chemical formulas, chemical equations, stoichiometry, atomic structure, chemical bonding, gas laws, solutions, and acids and bases are emphasized. (F,Sp,Su). Prerequisite: Reading Level 5 and Writing Level 4 and Math Level 5.
CHEM130	Biochemistry	4	This course is designed to provide an understanding of the chemistry of life processes. Topics include organic functional groups, enzymes, carbohydrates, lipids, proteins, metabolic pathways, nucleic acids, biochemical genetics, blood and respiratory chemistry, urine, electrolytes, acid-base balance, and hormones. (Sp,Su). Prerequisite: Reading Level 5 and Writing Level 6. Recommended: Minimum 2.0 in (CHEM 120 or CHEM 125).
CHEM135	Chemistry in Society	4	A general education course which presents chemistry to non-science majors who must function and make decisions in a society shaped by science and technology. Chemistry knowledge is introduced and applied on a need-to-know basis with respect to issues in society that have significant chemistry components. (F,Sp). Prerequisite: Reading Level 5 and Writing Level 6 and Math Level 4.
CHEM145	Intro to Forensic Chemistry	4	This course will introduce chemistry from the perspective of forensic laboratory practice. Students will explore a variety of physical and chemical methods of analysis using unknowns designed to simulate physical evidence problems. Students will also learn to use the scientific method in reaching conclusions about evidence. (F,Sp). Prerequisite: Reading Level 5 and Writing Level 4 and (Math Level 5 or MATH 107 concurrently). Recommended: Minimum 2.0 in CHEM 125 or High School Chemistry.
CHEM151	General Chemistry Lecture I	4	The first of two semester courses designed to provide an in-depth introduction to general chemistry for students who plan careers in the health professions, physical sciences, biological sciences, or engineering. Topics discussed include measurement, aqueous reactions, stoichiometry, thermochemistry, atomic structure, bonding, and acids and bases. (F,Sp,Su). Prerequisite: Reading Level 5 and Writing Level 6 and (Math Level 6 or MATH 112 concurrently). Recommended: (Minimum 2.0 in CHEM 125 or High School Chemistry) and CHEM 161 concurrently.
CHEM152	General Chemistry Lecture II	3	The second of two semester courses designed to provide an in-depth introduction to general chemistry for students who plan careers in the health professions, sciences, or engineering. Topics include kinetics, ionic equilibria, thermodynamics, electrochemistry, descriptive chemistry, and nuclear chemistry. (F,Sp,Su). Prerequisite: Minimum 2.0 in CHEM 151 and (Math Level 7 or MATH 120 or MATH 121 or MATH 126 concurrently). Course Note: Students planning to transfer to four-year institutions are encouraged to take MATH 121 or MATH 126 as the prerequisite for this course.
CHEM161	General Chemistry Lab I	1	Laboratory course designed to complement CHEM151. Stresses basic laboratory techniques, writing lab reports, and critical thinking exercises. Topics include density determination, synthesis, empirical formulas, molecular geometry, gas laws, pH and water hardness. (F,Sp,Su). Prerequisite: Minimum 2.0 in CHEM 151 or concurrently and Reading Level 5 and Writing Level 6 and Math Level 5.

COURSE	TITLE	CREDIT HOURS	TEXT
CHEM162	General Chemistry Lab II	1	Laboratory course designed to complement CHEM152. CHEM162 is the second semester general chemistry laboratory course. Stresses laboratory techniques and analyzing and reporting laboratory data. Topics include inorganic synthesis, chemical analysis, acid-base and solubility equilibria, oxidation-reduction reactions, and chemical kinetics. (F,Sp,Su). Prerequisite: Minimum 2.0 in (CHEM 152 or concurrently) and CHEM 161.
CHEM182	Introductory Organic Chemistry	3	A survey of the principles of organic chemistry. Introduces the student to structure, nomenclature, chemical and physical properties, selected characteristics, preparations and reactions of the most common classes of organic compounds. Other topics include polymers, optical isomerism, and selected reaction mechanisms. (F,Sp,Su). Prerequisite: Reading Level 5 and Writing Level 6. Recommended: Minimum 2.0 in CHEM 151.
CHEM192	Intro Organic Chem Lab	1	Designed for students in majors such as chemical processing, packaging, agriculture, and forestry who require only one credit of organic lab. It gives students an introduction to common techniques, equipment, and chemicals found in an organic laboratory. Particular attention is given to compounds studied in CHEM182. (F,Sp,Su). Prerequisite: Minimum 2.0 in CHEM 182 or concurrently and Reading Level 5 and Writing Level 6. Recommended: CHEM 151.
CHEM211	Chemical Process Technology I	4	This course provides an overview of Chemical Process Technology. Topics include the roles and responsibilities of Chemical Process Technicians, the equipment and systems that they operate, and relevant safety and environmental issues. The student will apply previously learned scientific principles to the field of Chemical Process Technology. (Sp). Prerequisite: Minimum 2.0 in CHEM 151 and Reading Level 5 and Math Level 6.
CHEM251	Organic Chemistry Lecture I	4	The first lecture course of a two-semester sequence in organic chemistry for chemical engineering, chemical technology, chemistry, or pre-professional majors. Topics include structure and bonding, hybridization, nomenclature, stereochemistry, thermodynamics and kinetics of organic reactions, functional groups including reactions and mechanisms, and applications of infrared and mass spectrometries. (F,Sp,Su). Prerequisite: Minimum 2.0 in CHEM 151. Recommended: Minimum 2.0 in CHEM 152.
CHEM252	Organic Chemistry Lecture II	4	Continuation of CHEM251. Topics include aromatic compounds, spectroscopy, organometallic compounds, aldehydes and ketones, carboxylic acids and their derivatives, amines, enolates, phenols, carbohydrates, polymers, and proteins. (F,Sp,Su). Prerequisite: Minimum 2.0 in CHEM 251.
CHEM262	Quantitative Analysis	3	This course covers the theory and procedures of classical analytical techniques, including gravimetric analysis and titrimetric methods. Use of instruments such as spectrophotometers, pH meters, and others is also included. Designed for laboratory technician preparation and for Chemical Process or transfer students. (F). Prerequisite: Minimum 2.0 in (CHEM 152 and CHEM 162).
CHEM272	Organic Chemistry Laboratory	2	Designed for students (in majors such as chemistry, pre-med, and pre-pharmacy) who require more than one credit of organic lab. It gives students experience with the chemicals, techniques, and equipment commonly employed in organic laboratories. Particular attention is given to compounds studied in CHEM251 and 252. (F,Sp). Prerequisite: Minimum 2.0 in CHEM 251. Recommended: CHEM 252 concurrently.
CHIN121	Elementary Chinese I	4	First course of a two-semester sequence in elementary Chinese. Students gain knowledge of Pinyin, the formation of Chinese characters, and the formation of Chinese words, as well as basic communication skills through dialogues, reading, writing, and listening comprehension. Everyday life in China, Chinese people, and culture are introduced and discussed. (F). Prerequisite: Reading Level 5.
CHIN122	Elementary Chinese II	4	Second course of a two-semester sequence in elementary Chinese. Students in this course receive additional communication-oriented Chinese language skills, which include speaking, reading, writing, and listening. Communication effectiveness will be improved. Building on the foundation of CHIN 121, an additional 1000 Chinese word combinations will be learned. (Sp). Prerequisite: Minimum 1.5 in CHIN 121 or equivalent.
CHSE100	Intro to Health Professions	3	This course is an overview of the health care industry, including medical ethics, trends in health care, and exploration of career options. It includes introduction to medical terminology, anatomy and physiology, vital signs measurement, math used for conversions, and universal precautions / blood borne pathogen training.(F,Sp,Su). Prerequisite: Reading Level 5 and Valid CPR certification through the end of class from ((American Heart Association/Health Care Provider or American Red Cross/Professional Rescuer) or (Passing grade in NCHE 102 or NCHE 103 within 2 years or concurrently)).

COURSE	TITLE	CREDIT HOURS	TEXT
CHSE101	Acute Care Nurse Assis/PCT	5	This course will prepare an individual for employment as a nursing assistant/PCT in a hospital, or other acute care delivery setting. The course will provide the knowledge and skills needed in order to provide safe basic patient care. This course does not provide eligibility to become a Certified Nurse Assistant (CNA). (F,Sp). Prerequisite: Reading Level 4 and Writing Level 4. Co-Requisite Course(s): NCHE 102.
CHSE108	Long-Term Care Nurse Aide	5	This course will prepare an individual to be a nurse aide in a long-term care facility or home health care agency. This state-approved course will provide specific knowledge and skills required for a nurse aide to safely function in a long-term care setting. Upon successful completion, the student is eligible to take the Certified Nurse Assistant (CNA) Exam. (F,Sp,Su). Prerequisite: Reading Level 4 and Writing Level 4.
CHSE109	LTC to Acute Care Completion	3	This bridge course will prepare individuals who have successfully completed long-term care nurse aide training for nurse aide/patient care technician (PCT) employment in acute and long-term care settings. This course will build on prior knowledge and skills as well as add new knowledge and skills required to deliver quality and safe basic patient care. (F,Sp,Su). Prerequisite: Reading Level 4 and Writing Level 4 and (minimum 2.5 in CHSE 108 or (current CNA Certification and Department Approval)). Co-Requisite Course(s): NCHE 102.
CHSE110	Nurse Aide: Acute & Long-Term	8	This course will prepare individuals to be nurse aides/PCT's in an acute care setting, long-term care facility, or home health care agency. The course will provide specific knowledge and skills required to deliver safe basic care. Successful completion of this course provides eligibility to take the Certified Nurse Assistant (CNA) Exam. (F,Sp,Su). Prerequisite: Reading Level 4 and Writing Level 4. Co-Requisite Course(s): NCHE 102.
CHSE114	Pathology-Allied Health	3	General principles of pathology are discussed in order to develop a new way of thinking about disease processes. Concepts of specific disease processes and their effect on normal structure and function of the body are presented. Disease prevention concepts are also discussed. (F,Sp). Prerequisite: Minimum 2.5 in BIOL 145 or (BIOL 201 and BIOL 202).
CHSE115	Pharmacology-Allied Health	2	This course is designed to familiarize the student with common medications encountered in health care occupations. Emphasis is on drug categories and the responsibilities associated with medication administration. (Sp). Prerequisite: Minimum 2.5 in BIOL 145 or (BIOL 201 and BIOL 202).
CHSE117	Health Law and Ethics	2	This course presents for discussion, legal and ethical issues arising from the organization and delivery of health care services. Topics include contracts, torts, business law; medical recordkeeping and retention; physicians' public duties; licensure, certification and regulation of health professionals; consent for treatment; and exploration of issues arising from various bioethical topics. (F,Sp,Su). Prerequisite: Reading Level 5 and Writing Level 4. Recommended: Health Careers Applicant or Professional.
CHSE118	Herbology Therapy/Allied Hlth	3	Principles of herbology are discussed along with an overview of Western and Eastern herbal traditions. Pronunciation of names for herbs used in medicine is emphasized. Concepts of health, disease and treatment from Western versus Eastern medical perspectives are discussed with emphasis on herbal interactions with drugs and the use of herbal alternatives to drug therapies. (F). Prerequisite: Reading Level 5 and Writing Level 4. Recommended: Health Careers Student or Professional.
CHSE119	Community Health Career Topics	.25 to 8	This course offers students the opportunity to learn new community health career skills and knowledge. Specific up-to-date content will vary with each seminar and will be related to the community health careers. (F,Sp,Su). Prerequisite: Determined by Section.
CHSE120	Medical Terminology	4	Medical Terminology will provide an in-depth knowledge of word building, use, pronunciations, spelling of medical terms, applying terms to the function and structure of body systems and specific disease conditions. Emphasis is placed on medical terms in periodicals, textbooks, and medical care areas. This is a health careers foundational course. (F,Sp,Su). Prerequisite: Reading Level 5 and Writing Level 4.
CHSE120A	Medical Terminology Basics	0.5	This Medical Terminology module presents the basics of word building, use, pronunciation, spelling, and application of terms to the function and structure of the body as a whole. Emphasis is on medical terms in periodicals, textbooks, and medical care areas. CHSE120, the parent course of this module, is a health careers foundational course. (F,Sp,Su). Prerequisite: Reading Level 5 and Writing Level 4.

COURSE	TITLE	CREDIT HOURS	TEXT
CHSE120B	Med Term: Heart & Lungs	0.5	This Medical Terminology module expands on the basics presented in Module A. Emphasis is on the cardiovascular and respiratory systems. The module utilizes reviews of medical terms in periodicals, textbooks, and medical care areas. CHSE120, the parent course of this module, is a health careers foundational course. (F,Sp,Su). Prerequisite: Minimum 2.5 in CHSE 120A or concurrently.
CHSE120C	Med Term: Radolgy/Musculoskel	0.5	This Medical Terminology module expands on the basics presented in Module A. Emphasis is on radiology and the musculoskeletal system. The module utilizes reviews of medical terms in periodicals, textbooks, and medical care areas. CHSE120, the parent course of this module, is a health careers foundational course. (F,Sp,Su). Prerequisite: Minimum 2.5 in CHSE 120A or concurrently.
CHSE120D	Med Term: Digest/Endocrine Sys	0.5	This Medical Terminology module expands on the basics presented in Module A. Emphasis is placed on medical terminology of the digestive and endocrine systems. The module utilizes reviews of medical terms in periodicals, textbooks, and medical care areas. CHSE120, the parent course of this module, is a health careers foundational course. (F,Sp,Su). Prerequisite: Minimum 2.5 in CHSE 120A or concurrently.
CHSE120E	Med Term: Urinary/Reprod Sys	0.5	This Medical Terminology module expands on the basics presented in Module A. Emphasis is on the urinary and reproductive systems. The module utilizes reviews of medical terms in periodicals, textbooks, and medical care areas. CHSE120, the parent course of this module, is a health careers foundational course. (F,Sp,Su). Prerequisite: Minimum 2.5 in CHSE 120A or concurrently.
CHSE120F	Med Term: Blood/Lymph/Oncology	0.5	This Medical Terminology module expands on the basics in Module A. Emphasis is on the blood and lymphatic systems and oncology. The module utilizes reviews of medical terms in periodicals, textbooks, and medical care areas. CHSE120, the parent course of this module, is a health careers foundational course. (F,Sp,Su). Prerequisite: Minimum 2.5 in CHSE 120A or concurrently.
CHSE120G	Med Term: Nervous, Eye & Ear	0.5	This Medical Terminology module expands on the basics in Module A. Emphasis is on the nervous system, eye and ear. The module utilizes reviews of medical terms in periodicals, textbooks, and medical care areas. CHSE120, the parent course of this module, is a health careers foundational course. (F,Sp,Su). Prerequisite: Minimum 2.5 in CHSE 120A or concurrently.
CHSE120H	Med Term: Skin & Psychiatry	0.5	This Medical Terminology module expands on the basics in Module A. Emphasis is placed on medical terminology relative to skin and psychiatry. The module utilizes reviews of medical terms in periodicals, textbooks, and medical care areas. CHSE120, the parent course of this module, is a health careers foundational course. (F,Sp,Su). Prerequisite: Minimum 2.5 in CHSE 120A or concurrently.
CHSE123	Medical Ins Billing/Coding I	4	This course introduces insurance billing and diagnostic and procedure coding using the ICD-9, CPT, and HCPCS. Legal and compliance issues and responsibilities and their relationship to insurances are discussed. Computerized insurance billing information is provided. (F,Sp). Prerequisite: Minimum 2.5 in CHSE 120 or concurrently.
CHSE124	Medical Ins Billing/Coding II	4	The course provides comprehensive billing directions for BCBS of Michigan, Medicare, Medicaid, commercial insurances including HMOs, managed care, and worker's compensation. (F,Sp,Su). Prerequisite: Minimum 2.5 in CHSE 123.
CHSE125	Comp I-Med Ins Billing/Coding	2	This course in combination with CHSE 124 introduces students to software used in medical office billing and coding. Students learn to record charges/payments/information, schedule appointments, ICD-9 and CPT coding, produce claim forms and patient statements, and build office databases. (Sp,F,Su). Prerequisite: Minimum 2.5 in CHSE 123. Recommended: Keyboarding experience.
CHSE130	Medical Ins Bill/Code Extern	4	This course provides students with worksite experience and training that is both physician office and hospital based. This experience will re-enforce the skills learned in CHSE 123, 124, and 125 and prepare students for an entry-level position in the medical billing and coding field. Students are required to attend lectures which will include discussion of professional work-place skills. (Sp). Prerequisite: Minimum 2.5 in (CHSE 123 and CHSE 124) and Pass grade in CHSE 125 and Reading Level 5 and Writing Level 4.
CHSE131	Electronic Health Records	2	This course introduces students to the Electronic Health Record (EHR) and its impact on health career-related job responsibilities. Through hands-on experience, students earn an awareness of how EHRs are used in different healthcare settings and how they change the nature of the work performed by individuals throughout the health care field. (F,Sp,Su). Prerequisite; Reading Level 5 and Writing Level 4 and (minimum 2.5 in CHSE 120 or concurrently).

COURSE	TITLE	CREDIT HOURS	TEXT
CHSE132	Health Unit Coordinator	5	This course is designed to prepare students to function as a health care unit coordinator. Subject matter will include communication skills, computers, assertiveness, chart forms, admissions, transfers, discharges, death and dying, pharmacology, laboratory tests, transcribing physician orders, and job application skills. Clinical component is included. (F,Sp). Prerequisite: (Minimum 2.5 in CHSE 120 or concurrently) and Reading Level 5 and Writing Level 4.
CHSE136	EKG Technician	3	This course teaches the theory and skills to perform process and explain electrocardiography and holter monitoring. Anatomy, physiology, pathology, and basic cardiac rhythm recognition is presented. Hands-on instruction and practice are included. Successful students may become certified through the American Certification Agency for Healthcare Professionals and/or the Cardiovascular Credentialing Institute. (F,Sp). Prerequisite: (Minimum 2.5 in CHSE 120 or concurrently) and Reading Level 5.
CHSE139	Community Health Career Topics	.25 to 8	This course offers students the opportunity to learn new community health career skills and knowledge. Specific up-to-date content will vary with each seminar and will be related to the community health careers. (F,Sp,Su). Prerequisite: Determined by Section.
CHSE143	Phlebotomy Technician	2	This course is designed to prepare a person to function as a phlebotomy technician. It will provide the knowledge and skill necessary to safely and skillfully ensure patient identification, obtain a blood sample from a patient, and properly handle specimens after collection. The course includes lecture and campus laboratory. (F,Sp,Su). Prerequisite: Reading Level 4.
CHSE144	Phlebotomy Externship	4	This course is designed to enable the student to apply procedures learned in CHSE 143, Phlebotomy Technician, to a clinical laboratory setting. While at the worksite (clinical laboratory), students will be under the supervision of a preceptor. The course includes lecture, a practical review of techniques, and worksite experience. (F,Sp,Su). Prerequisite: Minimum 2.5 in CHSE 143 within 1 year. Course Note: Required: 1) Completion of Bloodborne Pathogens & HIPAA Training online. Information given at orientation. 2) Negative 2-step TB (tuberculosis) skin test within the last year. 3) Additional arranged hours are required for online discussion board.
CHSE145	Sterile Processing Tech I	5	This course introduces individuals to basic skills needed in the Sterile Processing Department of health care facilities. Duties include processing of patient care equipment, supplies, and instruments for use in all departments. It also includes principles and practices of decontamination, cleaning, disinfection, sterilization, and distribution of medical/surgical supplies. Clinical component is included. (F,Sp). Prerequisite: Minimum 2.5 in CHSE 120 or concurrently and Reading Level 5 and Writing Level 4.
CHSE147	Sterile Processing Tech II	6	This course prepares individuals to function competently in the Sterile Processing Department in healthcare facilities. It builds on the principles and practices taught in CHSE 145 and includes practice in an externship. Successful completion of the course qualifies a student to take the National Certification Examination for Sterile Processing and Distribution. (F,Sp). Prerequisite: Minimum 2.5 in (CHSE 120 and CHSE 145) and Reading Level 5 and Writing Level 4.
CHSE150	CHSE Directed/Indep Study	.25 to 4	This course is designed to update, enhance, or remediate knowledge, skills, and competencies for the returning Community Health Services Education student through evaluation of previous learning, self-study, lecture/lab sessions, and/or scheduling into a supervised clinical component. A learning contract specifying objectives, activities and outcomes is required. (F,Sp,Su). Prerequisite: Department Approval.
CHSE235	Pharmacy Technician	4	This course is designed to introduce students to the skills necessary for a pharmacy technician position in a hospital or retail pharmacy. Students will be prepared to function with knowledge and accuracy in dispensing and control of drugs in either setting. Successful completion prepares students to take the Pharmacy Technician Certification Board National Certification Exam. (F,Sp). Prerequisite: Reading Level 5 and Math Level 4. Recommended: Minimum 2.5 in CHSE 115.
CHSE236	Pharmacy Technician Externship	3	This externship experience introduces the student to the skills necessary to perform the function of a pharmacy technician relative to prescription review, an introduction to prescription software, label preparation, and product selection during a hands-on activity in a live pharmacy environment. Students will be under preceptor supervision while at a hospital or community pharmacy. (F,Sp). Prerequisite: Minimum 2.5 in CHSE 235 within 1 year.

COURSE	TITLE	CREDIT HOURS	TEXT
CITA110	Intro to Microsoft Office	3	This course provides an introduction to MS Office. It is designed to develop basic operational proficiency while using Microsoft Office (Word, Excel, Access, and PowerPoint). Students learn how to use word processing, spreadsheet, database, and presentation software. Topics include creating letters, memos, simple spreadsheets, database structures, and slide presentations. (F,Sp,Su). Prerequisite: Reading Level 4. Recommended: Windows and keyboarding experience. Course Note: This class requires Microsoft Office 2010 and Microsoft Windows 7.
CITA115	Microsoft PowerPoint	3	This course introduces students to the basic features of Microsoft PowerPoint. Topics include creating presentations using themes, graphic elements, interactive elements and animation effects. Students will prepare presentations for distribution in a variety of formats. This course includes content to prepare the student for the PowerPoint Microsoft Certificated Applications Specialist exam. (F,Sp,Su). Prerequisite: Reading Level 4. Recommended: Windows and keyboarding experience. Course Note: This class requires Microsoft PowerPoint 2010.
CITA119	Microsoft Word	3	This course introduces students to the basic features of Microsoft Word. Major topics include formatting text; creating footnotes, lists, tables, columns, newsletters and charts; inserting graphics; and exposure to mail merge. (F,Sp,Su). Prerequisite: Reading Level 4. Recommended: Windows and keyboarding experience. Course Note: This class requires Microsoft Word 2010.
CITA126	Microsoft Excel	3	This course provides introductory through intermediate level training in Excel spreadsheets and prepares the student to take the Excel Microsoft Certified Applications Specialist exam. Instruction includes creating worksheets and charts, using formulas and functions, creating Subtotal and PivotTable reports, and working with multiple worksheets. (F,Sp,Su). Prerequisite: Reading Level 5. Recommended: Windows and keyboarding experience. Course Note: This class requires Microsoft Excel 2010.
CITA133	Microsoft Access Database	3	This course provides introductory through intermediate level training in the creation of database management systems using Microsoft Access. Instruction includes an introduction to Microsoft Access, database creation and maintenance, database querying, the generation of custom forms and reports, and integration of access with other programs. This course covers the content that prepares for the Microsoft Office Specialist Access Core certification. (F,Sp,Su). Prerequisite: Reading Level 4. Recommended: Windows and keyboarding experience. Course Note: This class requires Microsoft Access 2010.
CITA140	Microsoft Outlook	3	Students will use Outlook to manage typical business office communication needs. The course includes sending and organizing email, creating contacts, managing calendars and scheduling meetings. Students organize and archive data, and use email filters. This course covers content to prepare students for the Microsoft Certified Applications Specialist exam for Outlook. (F,Sp,Su). Prerequisite: Reading Level 4. Recommended: Windows and keyboarding experience. Course Note: This course requires Microsoft Outlook 2013.
CITA145	Microsoft Expression Web	3	This course provides instruction using Microsoft Expression Web, a full-featured program compliant with current Web standards. Students will use Expression Web (a component of Microsoft SharePoint Designer) to create and manage professional quality Web sites without programming. Topics include using templates, tables, cascading style sheets, frames and interactive forms. (F,Sp). Prerequisite: Reading Level 4. Recommended: Windows and keyboarding experience. Course Note: Microsoft Expression Web software is provided without charge to all enrolled students through the Microsoft Academic Alliance Program.
CITA160	Using Project Mgmt Software	3	Students will learn project management skills utilizing Windows-based project management software. Students work through all phases of setting up a project using multiple case studies that runs throughout the entire course. (F,Sp,Su). Prerequisite: None. Recommended: Windows familiarity and Reading Level 5.
CITA219	Advanced Microsoft Word	3	This course provides advanced level training using Microsoft Word. Topics include advanced table features, mail merge, creating forms, working with master and subdocuments, embedding and linking objects, and macros. (Sp). Prerequisite: Minimum 2.0 in CITA 119 and Reading Level 4. Recommended: Windows and keyboarding experience. Course Note: 1) This class requires Microsoft Word 2010. 2) An online course may require students to travel to an exam site for proctored exams. If you live at least 60 miles from LCC's Main Campus you may request to test at an approved proctored location (additional fees may apply). For additional information please visit https://www.lcc.edu/services/testing/

COURSE	TITLE	CREDIT HOURS	TEXT
CITA226	Microsoft Excel-Advanced	3	In this course advanced Excel functions and Excel tools will be used to solve business problems. The student will use Solver to calculate optimal solutions and apply Scenarios to analyze cost-volume-profit relationships. Other topics include creating data tables, importing data from other sources, and creating shared workbooks. Macros will be created using the macro recorder and by writing code using Visual Basic for Applications. This course together with content from CITA 126 prepares students for the Microsoft Certified Application Specialist (MCAS) exam. (F,Sp,Su). Prerequisite: Minimum 2.5 in CITA 126 and Reading Level 5. Course Note: 1) This class requires Microsoft Excel 2010. 2) An online course may require students to travel to an exam site for proctored exams. If you live at least 60 miles from LCC's Main Campus you may request to test at an approved proctored location (additional fees may apply). For additional information please visit https://www.lcc.edu/services/testing/
CITA229	Special Topics in Applications	.25 to 6	This course offers students the opportunity to learn new computer software application skills and knowledge. Specific up-to-date content will vary with each offering and will be related to the information technology professional. (F,Sp,Su). Prerequisite: Determined by Section.
CITA233	Advanced Microsoft Access	2	This course provides advanced level training in the creation of database management systems using Microsoft Access. Instruction includes working with web-enabled information, advanced custom reports and forms, advanced queries, advanced relationships, macros, switchboards, and introductions to the use of SQL and Visual Basic for Applications Code within Access. (F,Sp). Prerequisite: Minimum 2.0 in CITA 133 and Reading Level 5. Recommended: CITF 108 or equivalent. Course Note: This class requires Microsoft Access 2010.
CITD120	SQL Concepts	2	This course introduces the student to Structured Query Language (SQL). Topics include relational database concepts, queries, special operators, and the join operation. Students will gain experience in ANSI standard SQL. (F,Sp,Su). Prerequisite: Reading Level 4 and Writing Level 4. Recommended: Windows familiarity.
CITD140	Advanced SQL	3	This course teaches advanced SQL topics. Topics include advanced queries, views, data definition, data control, SQL optimization, embedded SQL and stored procedures. Students will use the MySQL database management system. (F,Sp). Prerequisite: Minimum 2.0 in CITD 120 and Reading Level 4 and Writing Level 4 and Math Level 4.
CITD227	Database Independent Study	.25 to 4	This course includes special research, projects, or other independent study in Database. Students may enroll to update or enhance knowledge, skills, and competencies. Advanced students may explore topics related to, but not included in the curriculum. Grading criteria and course objectives are determined at the first meeting. (F,Sp,Su). Prerequisite: Department Approval.
CITD229	Special Topics in Database	.25 to 6	This course offers students the opportunity to learn new Database Management skills and knowledge. Specific up-to-date content will vary with each offering and will be related to the Database professional. (F,Sp,Su). Prerequisite: Determined by Section.
CITD250	Database Concepts	3	Students learn the functions of a database management system. The relational model and SQL are used. Normalization and database design are covered. The CODASYL model is discussed and emerging trends are studied. (F). Prerequisite: Minimum 2.0 in CITF 110 and (CITP 110 or CITP 150) or (CITF 110 Placement Test and CITP 110 Placement Test) and Reading Level 5 and Writing Level 6.
CITF102	Computer Skills for Non-Majors	2	This course surveys concepts and uses of software applications: word processors, spreadsheets, and database managers. Terminology, problem solving, and acquisition factors associated with personal computers are discussed. Hands-on computer use is required. (F,Sp,Su). Prerequisite: None.
CITF103	Internet Basics	2	Designed to explore the potential uses of the Internet, students will complete hands-on, skill-based assignments and gain extensive experience utilizing a course management system to access and submit their course work. Students will develop basic skills using e-mail, search engines, modifying and posting a web page template. (F,Sp,Su). Prerequisite: None. Recommended: Windows familiarity and Reading Level 3 and Writing Level 4.
CITF107	IC3 Certification	3	This introductory level course provides a starting point for computer and Internet literacy skills sufficient for entrance into the job market or educational opportunities. Students prepare for the IC3 (Internet and Computing Core) certification gaining skill-based knowledge with both computer and Internet usage for enhanced productivity and marketability. (F,Sp,Su). Prerequisite: Reading Level 3 and Writing Level 4.

COURSE	TITLE	CREDIT HOURS	TEXT
CITF108	Microsoft Windows	2	This course is designed to provide students with a broad base of knowledge that is necessary for enhancing PC productivity through the efficient utilization of Microsoft Windows for file, application, and system use and management. Topics include the use of Windows Interface Objects, Utilities, Help features, Multimedia features, Internet features, closely related applications, and Applets (Windows XP). (F,Sp,Su). Prerequisite: Reading Level 3. Course Note: This class requires Microsoft Windows 7.
CITF110	Intro Computer Info Systems	3	This course provides an introduction to computers, their role in managing business information systems, their influence on society, and their use in personal productivity. It includes a hands-on introduction to three major microcomputer tools: word processors, spreadsheets, and database management systems. (F,Sp,Su). Prerequisite: Reading Level 4 and Writing Level 4. Course Note: This class requires MS Word 2010, MS Excel 2010, MS Access 2010, and Microsoft Windows 7. Students must have access to the proper version of the software off campus or use labs on campus to complete assignments. Online sections of this class assume the student can do simple e-mail and browser tasks; knows how to cut and paste; and knows how to create a simple MS Word document.
CITF120	Operating Systems Concepts	3	The course covers what operating systems are, why they exist, what they do, and how they interface with the operators and programmers. Main memory management and processor scheduling are studied along with device and file management. Case studies of current operating systems are studied. (F,Sp,Su). Prerequisite: Reading Level 5. Recommended: CITF 110 and (CITP 110 or CITP 150).
CITF125	IT Best Practices & Policies	3	This course provides students with the knowledge and skills they need to understand and implement best practices and policies for the IT industry. Adherence to best practice helps strengthen supplier/customer relations, make contractual obligations easier, and improve the market position of service providers seen to be compliant with accepted standards. (F,Sp). Prerequisite: None.
CITF140	Information Technology Ethics	3	This course explores the ethical dilemmas that confront IT professionals. Ethical codes of various organizations will be studied. Students will learn to apply critical thinking skills to the discussion of ethical questions. Topics will include privacy, intellectual property rights, software development, network administration, and the use of the Internet. (F,Sp). Prerequisite: Reading Level 5 and Writing Level 6.
CITF200	Info Sys Tech/Problem Solving	3	This course chronicles the source of computer technology in science, explores the limitations of computer technology, examines the impact of technology in business organizations and society, and develops problem-solving techniques for use in conjunction with computer systems. Students will work individually and in teams, and make one group presentation. (F,Sp,Su). Prerequisite: Reading Level 5 and Writing Level 6. Course Note: This course requires 8-12 hours per week outside of class time to complete assignments.
CITF225	IT Service Implementation	3	IT Service Implementation goes into detail on how Service Management standards and practices are applied within an IT organization. Topics include Performance measurement, tracking, project delivery, and monitoring IT services. (F,Sp). Prerequisite: Minimum 2.0 in CITF 125.
CITF227	Computer Foundations Ind Study	.25 to 4	This course includes special research, projects, or other independent study in a computer foundations area. Students may enroll to update or enhance knowledge, skills, and competencies. Advanced students may explore topics related to, but not included in the curriculum. Grading criteria and course objectives are determined at the first meeting. (F,Sp,Su). Prerequisite: Department Approval.
CITF229	Special Topics in Foundations	.25 to 6	This course offers students the opportunity to learn new computer foundational skills and knowledge. Specific up-to-date content will vary with each offering and will be related to the information technology professional. (F,Sp,Su). Prerequisite: Determined by Section.
CITF240	IT Project Management	3	This course provides a comprehensive introduction to IT Project Management and covers the basic concepts of project scope, planning, execution, and closure. Students will develop project plans; track to those plans; manage ambiguity and risks; and make changes to the plan. This course covers the objectives for CompTIA Project+ certification. (F,Sp). Prerequisite: Minimum 2.0 in (CITF 110 or CITF 200) and Reading Level 4 and Writing Level 4.

COURSE	TITLE	CREDIT HOURS	TEXT
CITF250	Info Security & Risk Mgmt	3	This course covers management of an Information Security System: development of policies, identification of information assets, analysis of risks, control and mitigation of risks, and regular audits of the correct operation and validity of the system. The course will examine ITIL best practices and the ISO 27001:2005 international standard. (F,Sp). Prerequisite: Minimum 2.0 in CITN 280 and Reading Level 5 and Writing Level 6.
CITF260	Systems Analysis and Design	4	This course presents concepts and techniques used in the development of computer business application systems. The traditional approach for systems development is presented and compared to the approach used in a 4th Generation Environment. Techniques for structured analysis and project management techniques will be used. Recent developments in analysis, including Computer Assisted Software Engineering (CASE) and Object-Oriented Analysis will be introduced. (Sp). Prerequisite: Minimum 2.0 in CITF 110 and (CITP 110 or CITP 150) and Reading Level 5 and Writing Level 6.
CITF280	Virtual Machine Environments	3	This course introduces students to popular Virtual System Environments being used to consolidate equipment and simplify system maintenance. Environments commonly used will be examined and worked with, including VMware, Microsoft Virtual PC, and Linux Xen. Students will gain an understanding of implementation considerations and system design requirements. (F,Sp). Prerequisite: Minimum 2.0 in CITN 230 and Reading Level 5.
CITN115	Home Technology Integration	5	This course provides an introduction to home technology integration with emphasis on the following: computer networking, audio/video, home security, industry standards, home lighting control, HVAC management, water system controls, home access controls and automated home features, low voltage wiring, and user interfaces. All topics are covered in lecture and lab experiments. (F,Sp,Su). Prerequisite: Reading Level 4 and Writing Level 4.
CITN120	Introduction to Networking	3	The student in this course learns the fundamentals of Local Area Networks (LANs) and related topics, including Wide Area Networking (WAN). Communication standards such as the OSI 7 layer model are introduced. Business telecommunications technologies will be introduced. (F,Sp,Su). Prerequisite: Reading Level 4 and Writing Level 4. Recommended: CITF 110.
CITN220	Networking Fundamentals	3	This course introduces the architecture, structure, functions, components, and models of the Internet and other computer networks. It uses the OSI and TCP layered models to examine roles of protocols and services at the application, network, data link, and physical layers. This course follows the Cisco CCNA Exploration objectives. (F,Sp). Prerequisite: Minimum 2.0 in CITS 125 and Reading Level 5 and Writing Level 6.
CITN222	Wireless Networking & Security	3	This course provides the student with the ability to understand the fundamentals of RF networks and describe the functionality of WLAN components. Students are provided with the skills to install, configure, secure, and troubleshoot WLAN hardware peripherals and protocols. This course prepares the student for various wireless certification exams. (F,Sp). Prerequisite: Minimum 2.0 in CITS 125 and Reading Level 5 and Writing Level 6.
CITN224	Convergence Technologies	3	This course provides students with the skills necessary to manage basic components of data, voice, and multimedia convergence applications and understand basic problem analysis and resolution for converged technologies. This course includes the CompTIA Convergence+ certification exam which proves competency in data networking, telephony, and other convergence-related technologies. (F,Sp). Prerequisite: Minimum 2.0 in CITN 120 and Reading Level 5 and Writing Level 6.
CITN225	Routing Protocols and Concepts	3	This course provides a comprehensive introduction to routing systems, devices, and protocols; how they are integrated into networks; and similarities and differences among them. Students will gain practical experience designing, implementing, and troubleshooting these protocols. This course follows objectives from the Cisco Networking Academy CCNA Exploration program. (F,Sp). Prerequisite: Minimum 2.0 in CITN 220 and Reading Level 5 and Writing Level 6.
CITN227	Networking Independent Study	.25 to 4	This course includes special research, projects, or other independent study in Networking. Students may enroll to update or enhance knowledge, skills, and competencies. Advanced students may explore topics related to, but not included in the curriculum. Grading criteria and course objectives are determined at the first meeting. (F,Sp,Su). Prerequisite: Department Approval.
CITN228	VoIP Fundamentals	3	VoIP Fundamentals provides the foundation for gaining hands-on skills and understanding of IP based voice packet telephony. Students will use available tools to evaluate the efficiency of IP voice networks while learning how to analyze, discuss, and demonstrate call quality issues and discuss the key standards and technologies in VoIP. (F,Sp). Prerequisite: Minimum 2.0 in CITN 225 and Reading Level 5 and Writing Level 6.

COURSE	TITLE	CREDIT HOURS	TEXT
CITN229	Special Topics in Networking	.25 to 6	This course offers the opportunity to learn new computer networking skills and knowledge. Specific up-to-date content will vary with each offering and will be related to the networking profession. (F,Sp,Su). Prerequisite: Determined by Section.
CITN230	Linux/UNIX Operating System	3	The student in this course learns to install, use and administer a Linux operating system, including user account management, network operation, and application software for Linux. Practical hands-on training is used throughout. This course covers the content required for the student to prepare for the CompTIA Linux+ certification exam. (F,Sp). Prerequisite: (Minimum 2.0 in CITF 120 or CITF 120 Placement Test) and (minimum 2.0 in CITN 220 or CITS 225) and Reading Level 5 and Writing Level 6.
CITN235	Internet Srvcs Admin+Hardening	3	This class covers the skills to implement, secure, and maintain web and Internet services using Linux. Administrators build servers that provide network services such as Mail, Printer, and Web Services. With CITN 230, this course covers the content required for the student to prepare for the second CompTIA Linux+ certification exam.(F,Sp). Prerequisite: Minimum 2.0 in CITN 230 and Reading Level 5 and Writing Level 6.
CITN239	Special Topics/Networking P/Z	.25 to 6	This course offers the opportunity to learn new computer networking skills and knowledge. Specific up-to-date content will vary with each offering and will be related to the networking profession. This course will be graded on a Pass/Fail basis. (F,Sp,Su). Prerequisite: Determined by Section.
CITN240	LAN Switching and Wireless	3	LAN (Local Area Network) Switching and Wireless is the third of the four courses leading to the Cisco Certified Network Associate (CCNA) certification. It focuses on advanced IP addressing techniques, intermediate routing protocols, configuration of switches. This course follows the objectives for the Cisco Networking Academy CCNA Exploration curriculum. (F,Sp). Prerequisite: Minimum 2.0 in CITN 220 and Reading Level 5 and Writing Level 6.
CITN244	Securing Networking Devices	3	This course introduces students to basic tasks needed to secure network routers and switches. Students will gain hands-on experience securing Cisco devices. This course covers the objectives of the Cisco Certified Network Associate - Security course (CCNA-S). (F,Sp). Prerequisite: Minimum 2.0 in CITN 225 and Reading Level 5 and Writing Level 6.
CITN245	Accessing the WAN	3	Accessing the WAN (Wide Area Network) is the fourth course leading to the Cisco Certified Network Associate (CCNA) certification. It focuses on advanced IP addressing techniques, Network and Port Address Translation, WAN technology and terminology, and introduction to optical networking. This course follows the objectives for the Cisco Networking Academy CCNA Exploration curriculum. (F,Sp,Su). Prerequisite: Minimum 2.0 in (CITN 225 and CITN 240) and Reading Level 5 and Writing Level 6.
CITN250	Microsoft Network Server	3	The student in this course learns installation, security, and best administration techniques for Microsoft Servers. This course covers content required for students to help prepare for the Microsoft Server certification exam that leads to Microsoft Certified Professional certification (MCP). (F,Sp). Prerequisite: Minimum 2.0 in (CITF 120 or CITF 120 Placement Test) and (minimum 2.0 in CITN 220 or CITS 225) and Reading Level 5 and Writing Level 6.
CITN255	Advanced Microsoft Server	3	This course provides students with the knowledge and skills they need to perform installation and administrative duties for Windows server services. Students learn to install, configure and maintain the server operating systems services, ensure server security and support users. The student will explore features of services and learn to implement security. (F,Sp). Prerequisite: Minimum 2.0 in CITN 250 and Reading Level 5 and Writing Level 6.
CITN280	IT Security Foundations	3	This course provides a comprehensive introduction to IT security, covering basic concepts of data integrity, confidentiality, and availability, and focusing on relevant threats and countermeasures. Students will be prepared to evaluate Information Security needs of organizations and to develop policies addressing these needs. This course covers the objectives identified for CompTIA Security+ certification. (F,Sp). Prerequisite: Minimum 2.0 in (CITN 220 or CITS 225) and Reading Level 5 and Writing Level 6. Recommended: CITN 230 or CITN 250 or CITN 270.
CITN282	Computer Forensics	3	This course deals with the preservation, recovery, identification, extraction, documentation, and interpretation of computer data. Topics covered include evidence handling, chain of custody, collection, preservation, identification and recovery of computer data. Students will gain experience with current computer forensic tools. (F,Sp). Prerequisite: Minimum 2.0 in (CITF 140 and CITN 220) and Reading Level 5 and Writing Level 6.
CITN295	CCNA Review	3	This course is a review of the materials leading to the Cisco Certified Network Associate (CCNA) certification. It reviews networking fundamentals, routing concepts, switches, wireless, LANs, and WANS, This course reviews the objectives for the Cisco Networking Academy CCNA Exploration curriculum. (F, Sp). Prerequisite: Minimum 2.0 in CITN 245 and Reading Level 5 and Writing Level 6.

COURSE	TITLE	CREDIT HOURS	TEXT
CITP110	Intro to Computer Programming	4	Students are introduced to the fundamental techniques for understanding, designing, constructing , and testing object-oriented programs. Topics include: structured program design; basic programming control structures; functions; classes; methods; user interface design; and working with data. Students are required to complete computer-based assignments using Python. (F,Sp). Prerequisite: Reading Level 5.
CITP140	Software Testing	3	This course is an introduction to software testing and quality assurance. The fundamentals of software testing are covered including test planning, test case design, the types of testing, such as performance and regression. Also covered are test management, automation, and how people and organizational issues affect testing. (F, Sp). Prerequisite: Minimum 2.0 in (CITP 110 or concurrently) and Reading Level 5.
CITP150	Intro to VB.NET Programming	4	This course introduces students to programming concepts through the use of the Visual Basic.NET programming environment. Students learn to develop business applications by designing and creating a user interface and writing the necessary procedures. Students also learn and use logic development tools and object oriented programming terminology and techniques. (F,Sp). Prerequisite: Minimum 2.0 in CITP 110 and Reading Level 5.
CITP180	Intro to C#.NET Programming	4	Students will use Microsoft Visual Studio .NET to become familiar with the C# .NET programming language by designing, implementing, and testing programming projects. Topics include creating and using methods and classes; inheritance; exception handling, and using controls. (F,Sp). Prerequisite: Minimum 2.0 in CITP 110 and Reading Level 5.
CITP190	Intro to Programming in JAVA	4	This course introduces students to basic programming concepts using the Java Programming language. It introduces object-oriented programming methodology and features provided by the Java language. During the course, students will review sound programming practices and learn accepted Java programming procedures. Students will create and modify simple Java applications and applets. (F,Sp). Prerequisite: Minimum 2.0 in CITP 110 and Reading Level 5. Course Note: An online course may require students to travel to an exam site for proctored exams. For additional information please visit https://www.lcc.edu/services/testing/
CITP227	Programming Independent Study	.25 to 4	This course includes special research, projects, or other independent study in Programming. Students may enroll to update or enhance knowledge, skills, and competencies. Advanced students may explore topics related to, but not included in the curriculum. Grading criteria and course objectives are determined at the first meeting. (F,Sp,Su). Prerequisite: Department Approval.
CITP229	Special Topics in Programming	.25 to 6	This course offers students the opportunity to learn new computer programming skills and knowledge. Specific up-to-date content will vary with each offering and will be related to the computer programming profession. (F,Sp,Su). Prerequisite: Determined by Section.
CITP240	Advanced Software Testing	3	This course is the second in a sequence of software testing classes. It covers in more detail testing procedures, test management, and testing techniques. Also included are test tools and automation as well as people skills and team composition for a successful quality assurance team. (Sp). Prerequisite: Minimum 2.0 in CITP 140 and Reading Level 5.
CITP250	Advanced VB.NET Programming	4	This course is a second course in the VB.NET programming sequence and leads to the creation of functional Windows and Web based application programs. Topics include multitier application development, service base architecture, data validation, object oriented programming concepts, database access and programming, use of collections and developing help systems. (Sp). Prerequisite: Minimum 2.0 in CITP 150 and Reading Level 5. Course Note: An online course may require students to travel to an exam site for proctored exams. For additional information please visit https://www.lcc.edu/services/testing/
CITP280	Advanced C#.NET Programming	4	Students will use Microsoft Visual Studio .NET to become familiar with advanced C#.NET programming concepts including database and web programming. Topics include using threads, database interaction using ADO.Net, interfacing to Crystal Reports, and creating web applications. (F,Sp). Prerequisite: Minimum 2.0 in CITP 180 and Reading Level 5.
CITP290	Adv JAVA Programming for Busn	4	This course introduces advanced Java Programming concepts. Students will use sound programming practices and accepted Java programming procedures. Students will create and modify computer programs as might be encountered in creating Java applications for industry. Topics covered in this course provide a strong preparation for the Sun Certified Programmer Certification. (F,Sp,Su). Prerequisite: Minimum 2.0 in (CITP 190 and CITW 150) and Reading Level 5.

COURSE	TITLE	CREDIT HOURS	TEXT
CITP295	Programming Internship	3	This internship provides the student with on-the-job experience as a computer programmer. The student is expected to write or maintain programs, test programs, create documentation, and perform analysis. It is designed to be the culmination of the Computer Programmer/Analyst Associate Degree and as final preparation for entering the job market. (F,Sp,Su). Prerequisite: Department Approval.
CITS125	Computer Support: A+ Cert Prep	6	This course provides students with the skills to diagnose and correct problems that computer users encounter. The student receives practical hands-on experience in installing, maintaining, and troubleshooting computer hardware and software while developing their communication skills and professionalism. This course includes the CompTIA A+ Essentials and A+ Practical Application certification exams that are required to receive CompTIA A+ certification. (F,Sp). Prerequisite: Reading Level 5 and Writing Level 4 and Math Level 3.
CITS143	Hardware Support Skills	4	This course provides students with skills in three separate areas; schematic drawing, soldering, and test equipment operation. Students will learn how to read and write schematic diagrams, identify electronic components, solder and desolder components on printed circuit boards and operate electronic test equipment used in PC repair. (F, Sp). Prerequisite: Reading Level 5 and Writing Level 2.
CITS160	Logic Problems Analysis	3	Course topics include manipulation of formulas used in electronics, basic gate operation, truth tables, Boolean algebra, binary, octal and hexadecimal base number systems. (F,Sp,Su). Prerequisite: Reading Level 5 and Writing Level 2 and Math Level 4. Recommended: Math Level 5.
CITS170	Basic Electronic for PC Repair	6	This course begins with basic electricity concepts and discusses basic electricity, basic electronics, electric circuits, diodes, transistors, digital devices, and digital circuits. Course work includes lab exercises each week. (F). Prerequisite: Reading Level 5 and Writing Level 2 and Math Level 4. Recommended: CITS 160 or Math Level 5.
CITS176	PC Hardware Troubleshooting	6	This course provides students with the skills necessary to troubleshoot and repair desktop and laptop computers. Students will be instructed in the proper selection and use of the tools needed to perform diagnostics and preventative maintenance on personal computers. The course also stresses the importance of following proper safety and ESD procedures. (Sp). Prerequisite: Minimum 2.0 in CITS 170 and Reading Level 5 and Writing Level 2.
CITS181	Computer Diagnostic Software	2	Topics include the computer POST test, software diagnostic programs, hardware diagnostic cards, and other computer troubleshooting equipment. Coursework includes lab exercises each week. (Sp). Prerequisite: Minimum 2.0 in (CITS 125 or CITS 176 or concurrently) and Reading Level 5.
CITS225	Networking for PC Technicians	3	This course provides students with the practical skills to setup, maintain, and manage Local Area Networks. Students will receive a comprehensive introduction to networking standards and protocols, networking hardware and software, transmission basics, Internet connectivity, wireless networking, network security, and convergence technologies. This course includes the CompTIA Network+ certification exam. (F,Sp). Prerequisite: Minimum 2.0 in CITS 125 and Reading Level 5 and Writing Level 4 and Math Level 3.
CITS227	Comp Support Indepen Study	.25 to 4	This course includes special research, projects, or other independent study in Computer Support. Students may enroll to update or enhance knowledge, skills, and competencies. Advanced students may explore topics related to, but not included in the curriculum. Grading criteria and course objectives are determined at the first meeting. (F,Sp,Su). Prerequisite: Department Approval.
CITS229	Special Topics/Support	.25 to 6	This course offers the opportunity to learn new computer support skills and knowledge. Specific up-to-date content will vary with each offering and will be related to the computer support profession. (F,Sp,Su). Prerequisite: Determined by Section.
CITS285	IT Professional Internship	2 to 3	Designed to be the culmination of information systems students' associate degree program. It is intended to give the student live work experiences as a specialist in computer systems or support. It is to be taken at the end of the student's curriculum as final preparation for entering the job market. (F,Sp,Su). Prerequisite: Department Approval.
CITW150	Internet Literacy	3	This course teaches hands-on skills and builds knowledge for Internet professionals. It is designed to explore the potential uses of the Internet for business and communication including the use of email, search engines, discussion boards, and other Internet applications including web page development. This course also discusses the rapidly changing world of the Internet. (F,Sp,Su). Prerequisite: Reading Level 5 and Writing Level 6. Recommended: Windows familiarity.

COURSE	TITLE	CREDIT HOURS	TEXT
CITW160	Web Site Design & Development	3	This course explores techniques of web page construction including Web usability, HTML and CSS. Students will develop individual websites that progress to include elements such as graphics and multimedia. Within a team, students will demonstrate their understanding and application of the concepts introduced during the semester. (F,Sp,Su). Prerequisite: (Minimum 2.0 in CITW 150 or concurrently) or (minimum 2.0 in ARTS 173 or concurrently) and Reading Level 5 and Writing Level 6.
CITW165	Advanced Web Development	3	This course explores innovative techniques of web page construction using newer, more flexible technologies for added web site functionality. Students create several industry-compliant web pages that respond to user input given through the browser and manage an interactive web site using these technologies. (F,Sp). Prerequisite: Minimum 2.0 in CITW 160 and Reading Level 5 and Writing Level 6.
CITW175	Web Site Management	3	This course presents a comprehensive introduction to web site planning, promotion, security, and legal issues associated with web site management. Students explore web-based communication tools, domain names, web site hosting, shopping cart software and manage an individual web site to demonstrate concepts presented throughout the semester. (Sp). Prerequisite: Minimum 2.0 in CITW 160 and Reading Level 5 and Writing Level 6.
CITW180	ASP.NET Web Development	4	This course provides instruction in building web sites using Microsoft ASP.NET. Students create dynamic, flexible, and interactive web pages that interact with a database. Students explore server controls, validation controls, security issues, user authentication, and manage an individual web site to demonstrate concepts presented throughout the semester. (Sp). Prerequisite: Minimum 2.0 in CITW 160 and (CITP 150 or CITP 250) and Reading Level 5 and Writing Level 6.
CITW185	PHP Web Development	4	This course provides instruction in building web sites using PHP scripting language. Students will learn how to create dynamic, flexible, and interactive web pages, connect to and update a MySQL database as well as develop an individual web site throughout the semester. (F, Sp). Prerequisite: Minimum 2.0 in (CITW 160 or ARTS 173) and Reading Level 5 and Writing Level 6.
CITW227	Web Independent Study	.25 to 4	This course includes special research, projects, or other independent study in computer web skills. Students may enroll to update or enhance knowledge, skills, and competencies. Advanced students may explore topics related to, but not included in the curriculum. Grading criteria and course objectives are determined at the first meeting. (F,Sp,Su). Prerequisite: Department Approval.
CITW229	Special Topics/Web	.25 to 6	This course offers students the opportunity to learn new computer web skills and knowledge related to the World Wide Web. Specific up-to-date content will vary with each offering and will be related to the computer web profession. (F,Sp,Su). Prerequisite: Determined by Section.
CIVL100	Intro to Civil Technology	3	Students explore programs of study, the nature of work performed by technicians, and opportunities available in civil technology fields. Topics include site layout, surveying, types of materials, computer methods, and tools used to address current issues in civil technology. Field trips to private (engineering consulting) and public (MDOT) offices are conducted. (F). Prerequisite: Reading Level 3 and Writing Level 2 and Math Level 4.
CIVL101	Civil Drafting	3	This course emphasizes plotting land surveying descriptions, traverses, contours, profiles, cross-sections, templates, and the three views required in highway work. Students will learn how to read basic highway plans and make sketches from field notes. (F,Sp). Prerequisite: Minimum 2.0 in GRET 203.
CIVL110	Density Certification	2	Students will study techniques and equipment used in determining properties of aggregates, concrete and other materials. Each student will receive a density certification card after successfully completing the course. (Sp). Prerequisite: (Minimum 2.0 in MATH 114 or Math Level 5) and Reading Level 4.
CIVL120	Surveying	4	Introduces students to surveying technology and the use of the latest equipment. Emphasis is placed on developing skills in operation and the proper handling of high-tech equipment used in the surveying business. Good field work habits and office engineering are covered. (F). Prerequisite: Minimum 2.0 in MATH 114 or Math Level 5.
CIVL124	Route Survey	4	This course includes surveying computations in such areas as horizontal curves, vertical curves, spirals and data needed for highway construction layout. Also includes work with surveying computation software and fieldwork with total stations. (Sp). Prerequisite: Minimum 2.5 in CIVL 120.

COURSE	TITLE	CREDIT HOURS	TEXT
CIVL131	Traffic Technology	3	This course introduces basic principles of traffic engineering design, signing and pavement marking, traffic signalization and how these elements are used to improve motorists' safety. Emphasis is placed on the use of these devices in and around construction zones. Basic concepts on traffic flow and capacity analysis will be presented. (F). Prerequisite: None.
CIVL135	Soils Technology	3	Exploring, sampling, testing and evaluating subsurface materials and their effect on construction are covered in this course. Includes an introduction to methods of subsurface drainage, soil classifications and physical properties of soils; and discussion, demonstration and performance with equipment used in density testing. (Sp). Prerequisite: Minimum 2.0 in MATH 114 or Math Level 5.
CIVL136	Hydrology & Highway Technology	5	This course is an introduction to highway inventory, planning, organization, rudiments of finance, geometric design, earthwork, and drainage structures. Emphasis is placed on these elements as components of final highway plans. Analysis of precipitation and the attendant runoff and recharge will be introduced. (Sp). Prerequisite: None.
CIVL141	Site Inspection	3	This course introduces students to the principles of construction inspection including safety practices (MIOSHA), legal aspects, reporting, and applicable specifications, codes and standards. (Sp). Prerequisite: Reading Level 3 and Writing Level 2 and Math Level 4.
CIVL142	Construction Specifications	3	This course examines the content of construction contracts, as-built drawings, and other documents required as part of the design and construction of various building projects. General conditions, specifications, organization, addendums, bulletins, change orders, and terminology, and the roles of site inspector, contractor and engineer are discussed. (F). Prerequisite: Reading Level 4 and Writing Level 2 and Math Level 4.
CIVL143	Site Dsgn & Layout/Civil Techn	3	In this course, students apply road and land development procedures, and interpret survey data in assembling sets of construction drawings. Topics include developing cross sections, road profiles, and utility layouts. (F,Sp). Prerequisite: Minimum 2.0 in CIVL 101.
CIVL170	Special Topics/Civil Tech	.25 to 8	This course offers students the opportunity to learn new or advanced skills in Civil Technology and other related topics. Specific content may vary with each offering and will be related to the Civil Technology Program and profession. (F,Sp,Su). Prerequisite: None.
CIVL171	Special Topics/Civil Tech P/Z	.25 to 8	This course offers students the opportunity to learn new or advanced skills in Civil Technology and other related topics. Specific content may vary with each offering and will be related to the Civil Technology Program and profession. This course will be graded on a Pass/Fail basis. (F,Sp,Su). Prerequisite: Determined by Section.
CIVL200	Civil Mathematics	4	This course applies differential calculus and integral calculus to practical technical problems. Topics include related rates, maximum and minimum problems and areas under curves. (F). Prerequisite: Minimum 2.0 in MATH 114 or Math Level 5. Recommended: MATH 115.
CIVL225	Civil Tech Independent Study	1 to 4	Students are allowed to undertake special research projects to apply to their professional experience and academic major. A minimum of 48 hours of work per credit is required and the completion of a written project report. This course cannot be audited. (Sp). Prerequisite: None. Restriction: Civil Technology Majors.
CIVL241	Statics/Strength of Materials	4	Structural terminology and concepts are introduced. General behavior of structural members in compression, stress, strain, creep, fatigue, yield, tension, shear, bending and torsion due to different loading conditions are studied. Loads and forces, conditions of stability and equilibrium in structural frames and free body analysis for reactions and member forces are considered. (Sp). Prerequisite: Minimum 2.0 in MATH 114 or Math Level 5.
CIVL290	Civil Technology Internship	2 to 4	This course provides Civil Technology students with practical work experience in industry. Students work for an employer in a supervised environment which provides an opportunity to apply knowledge and skills learned in the classroom and lab to an actual job situation. (Su). Prerequisite: Department Approval.
CJUS101	Intro to Criminal Justice	3	A survey course designed to provide students with a current, coordinated, and comprehensive overview of criminal justice as an institution and as a system. Emphasizes historical, philosophical, constitutional, and organizational perspectives. (F,Sp,Su). Prerequisite: Reading Level 5 and Writing Level 4.

COURSE	TITLE	CREDIT HOURS	TEXT
CJUS102	Crime Causes and Conditions	3	Why do some individuals pursue a life of crime? This course introduces and analyzes the past, present, and future of criminology. Sociological, psychological, and biological factors are examined to determine their interaction with and impact on criminal behavior. (F,Sp,Su). Prerequisite: Reading Level 5 and Writing Level 4.
CJUS103	Criminal Law	3	Study of substantive criminal law. Includes classification of crimes, common law concepts, elements of specific crimes, and discussion of current trends in criminal law nationally and locally. (F,Sp,Su). Prerequisite: Minimum 2.0 in CJUS 101 or concurrently.
CJUS104	Theory of Patrol	3	This course is designed to introduce the student to the concepts and theories of patrol and the delivery of police services. (F,Sp,Su). Prerequisite: Reading Level 5 and Writing Level 4. Recommended: CJUS 101.
CJUS106	Intro to Juvenile Justice	3	This course emphasizes the legal foundation, as defined by Michigan law, upon which the criminal justice practitioner must rely in dealing with the juvenile offender and the juvenile victim. In addition, this course will introduce the student to the juvenile offender. (F,Sp,Su). Prerequisite: Reading Level 5 and Writing Level 4.
CJUS126	Juvenile Offenders/Families	3	This course takes an in-depth look at the diverse nature of juvenile offenders and their family backgrounds. Issues impacting juvenile behavior such as gender, gangs, drugs, and disabilities will be discussed. (F,Sp,Su). Prerequisite: Minimum 2.0 in CJUS 106 or concurrently.
CJUS130	Local Detention	3	This course explains operations of local detention facilities and their unique role in the criminal justice system. Emphasis is placed on Michigan jail and lockup operations, as well as the organization, management, policy environment, and emerging issues confronting American jails. Differences in jail and prisons regarding operations and differing clientele are also covered. (F,Sp). Prerequisite: Reading Level 5 and Writing Level 4.
CJUS131	Introduction to Corrections	3	Introduction to agencies and processes within the correctional system. An examination of correctional officer behavior, corrections legislation, the courts, correctional institutions and their operation, and administration. Includes overview of history sentencing, probation, parole, and community corrections. This course is required for the corrections officer vocational certificate. (F,Sp). Prerequisite: Reading Level 5 and Writing Level 4. Course Note: An online course may require students to travel to an exam site for proctored exams. For additional information please visit https://www.lcc.edu/services/testing/
CJUS133	Juvenile Residential Services	3	All aspects of court-placement of juveniles in residential facilities will be examined. Staffing and operations of both public and private agencies will be discussed, focusing both on treatment and detention issues. (F,Sp,Su). Prerequisite: Minimum 2.0 in CJUS 106 or concurrently.
CJUS134	Probation and Parole	3	An introductory level course in probation and parole with strong emphasis on counseling, interviewing skills, and supervision techniques. Students will also learn the mechanics of writing violation, progress, and pre-sentence reports. (F,Sp,Su). Prerequisite: Minimum 2.0 in (CJUS 101 or CJUS 131) or concurrently.
CJUS135	Legal Issues in Corrections	3	Study of current constitutional, federal and state law as it pertains to penal institutions, inmates, and correctional employees. The course will provide students with insight into policy considerations behind state and federal law, legal process, court decisions, and inmate rights. This course is required for the correctional officer vocational certificate. (F,Sp,Su). Prerequisite: Minimum 2.0 in (CJUS 130 or CJUS 131) or concurrently.
CJUS201	Criminal Justice Org/Admin	3	Examines the primary concepts of criminal justice organization and administration emphasizing processes and theories, communications, leadership, personnel, budgeting, planning, information management, and community relations. (F,Sp,Su). Prerequisite: Minimum 2.0 in CJUS 101.
CJUS203	Criminal Procedure	3	This course is a study of criminal procedural law. It will include laws of arrest, search and seizure, and admissions and confessions; suspect identification; and rules of evidence. (F,Sp). Prerequisite: Minimum 2.0 in CJUS 103.
CJUS204	Criminal Investigation	4	Examines the fundamentals of criminal investigation such as crime scene procedures, collection and preservation of physical evidence, interviewing, interrogation, and latent investigation. (F,Sp). Prerequisite: Minimum 2.0 in CJUS 101 and Reading Level 5 and Writing Level 4. Recommended: Minimum 2.0 in CJUS 103.

COURSE	TITLE	CREDIT HOURS	TEXT
CJUS205	Policing into the 21st Century	3	This course is designed to provide the student with an understanding of the philosophy of community policing. As such, the components and processes involved in the implementation of non-traditional policing methods, as well as the development of a partnership between the community and the police, will be examined. (F,Sp). Prerequisite: Minimum 2.0 in CJUS 101.
CJUS210	Intro to Forensic Science	3	Forensic Science is the application of scientific methods in the analysis of physical evidence generated by criminal activity. This introductory course will cover four major aspects of physical evidence from actual criminal cases including crime scene investigation; the collection, preservation and value of physical evidence; the forensic analysis of physical evidence; and expert testimony. (F,Sp). Prerequisite: Reading Level 5 and Writing Level 4.
CJUS242	Unarmed Defense	3	Hands-on techniques to prepare students to properly and effectively handle law enforcement related physical confrontations. It will include use of force decision-making skills, pressure points, control holds, and handcuffing. (F,Sp,Su). Prerequisite: None.
CJUS245	Report Writing/Crim Justice	3	This course is designed to meet the needs of criminal justice writing. Components include grammar, punctuation, sentences, paragraphs, styles of writing, and proper documentation of work effort. The course includes frequent writing practice. (F,Sp,Su). Prerequisite: Minimum 2.0 in (CJUS 101 or CJUS 131) and (CJUS 103 or CJUS 135) and Reading Level 5 and Writing Level 4.
CJUS247	Juvenile Justice: Special Pops	3	This course provides an in-depth examination of special populations, issues, and practices associated with youth and the juvenile justice system. (Sp). Prerequisite: Minimum 2.0 in (CJUS 101 and CJUS 106) and Reading Level 5 and Writing Level 4. Recommended: Minimum 2.0 in (CJUS 126 and HUSE 110 and PSYC 200).
CJUS250	Correctional Institutions	3	This course examines the historical development of corrections institutions in the United States. The organizational structure, purpose, programs, security aspects, and prisoner due-process rights, as well as the future of institutions will be examined. This course is required for the correctional officer vocational certificate. (F,Sp,Su). Prerequisite: Minimum 2.0 in CJUS 131 or concurrently.
CJUS251	Correctional Clients	3	Emphasis is placed on the needs, identities and development of the recipient of correctional services. Students will gain insight into the behavior and motivations of the corrections client and learn intervention strategies. This course is required for the correctional officer vocational certificate. (F,Sp,Su). Prerequisite: Minimum 2.0 in (CJUS 130 or CJUS 131) or concurrently.
CJUS255	Human Relations/Crim Justice	3	This course focuses on understanding those aspects of interpersonal relations most directly linked to attainment of organizational and individual goals in work settings. This course is required for the correctional officer vocational certificate. (F,Sp,Su). Prerequisite: Minimum 2.0 in (CJUS 101 or CJUS 130 or CJUS 131) or concurrently and Reading Level 5 and Writing Level 4.
CJUS260	Criminal Investig/Procedures	3	Designed for hands-on, practical instruction in the following areas: crime scene processing, on-scene preliminary investigation, witness interviewing, suspect identification, latent prints, photography, child abuse, sexual assault, narcotics, and preparation for court. (F,Sp). Prerequisite: Department Approval. Co-Requisite Course(s): CJUS 261 and CJUS 262 and CJUS 263 and CJUS 264 and CJUS 265 and CJUS 269 and PFFT 114 and PFHW 100.
CJUS261	MI Criminal Law & Procedures	4	Designed for hands-on, practical instruction in criminal law and procedure as it pertains to law enforcement in the state of Michigan. Topics include crimes against persons and property, regulatory crimes, public order crimes, juvenile law, admissions/confessions, laws of arrest, search and seizure, and suspect identification. (F,Sp). Prerequisite: Department Approval. Co-Requisite Course(s): CJUS 260 and CJUS 262 and CJUS 263 and CJUS 264 and CJUS 265 and CJUS 269 and PFFT 114 and PFHW 100.
CJUS262	Patrol Procedures and Tactics	4	The course is designed to identify and utilize proper patrol techniques and procedures necessary for a police officer to function safely and effectively. Topics include preparation for patrol, types of patrol, responding to crimes in progress, roadblocks, civil process, handling abnormal persons, and officer survival. (F,Sp). Prerequisite: Department Approval. Co-Requisite Course(s): CJUS 260 and CJUS 261 and CJUS 263 and CJUS 264 and CJUS 265 and CJUS 269 and PFFT 114 and PFHW 100.
CJUS263	Standard First Aid	2	Designed to identify the roles and responsibility of a law enforcement officer at the scene of a medical emergency based upon American Red Cross standard first aid and CPR training. (F,Sp). Prerequisite: Department Approval. Co-Requisite Course(s): CJUS 260 and CJUS 261 and CJUS 262 and CJUS 264 and CJUS 265 and CJUS 269 and PFFT 114 and PFHW 100.

COURSE	TITLE	CREDIT HOURS	TEXT
CJUS264	Report Writing/Law Enforcement	2	This course is designed to prepare the student to effectively and efficiently write a proper police report that will serve as a basis for the issuance of a warrant and court prosecution. Topics include obtaining information, basic English skills, criminal justice terminology, and proper formatting. (F,Sp). Prerequisite: Department Approval. Co-Requisite Course(s): CJUS 260 and CJUS 261 and CJUS 262 and CJUS 263 and CJUS 265 and CJUS 269 and PFFT 114 and PFHW 100.
CJUS265	Highway Traffic Operations	5	This course is designed to familiarize the student with the proper procedures for traffic control and enforcement. Emphasizes state motor vehicle laws and procedures, arrests and citations, O.U.I.L., and accident investigation. (F,Sp). Prerequisite: Department Approval. Co-Requisite Course(s): CJUS 260 and CJUS 261 and CJUS 262 and CJUS 263 and CJUS 264 and CJUS 269 and PFFT 114 and PFHW 100.
CJUS269	Police Skills:FrArm/DefTac/Drv	8	This course is designed to assist law enforcement students in developing and improving their skills in firearms, subject control, and emergency vehicle operations. This course involves both classroom and hands-on training. (F,Sp). Prerequisite: Department Approval. Co-Requisite Course(s): CJUS 260 and CJUS 261 and CJUS 262 and CJUS 263 and CJUS 264 and CJUS 265 and PFFT 114 and PFHW 100.
CJUS281	Directed Independent Study	1 to 3	Sixteen hours of study and research are assigned per credit. Students are given criminal justice related research assignments that will introduce them to research procedures and resources. (F,Sp,Su). Prerequisite: Department Approval.
CJUS285	Law Enforcement Internship	2	Sixteen eight-hour shifts are scheduled with an approved police department. Written reports are required. (F,Sp,Su). Prerequisite: Department Approval. Course Note: Department approval requires a completed application submitted to the Public Service Careers Office. Worksite placements must be approved by the instructor. Students will be notified by phone upon acceptance into the course.
CJUS286	Juvenile Internship I	3	The student will be placed in a local program dealing with young people from at risk populations. A classroom component includes preparation for job interviews and other skill-building exercises for working in the juvenile justice field. Written reports are required. (F,Sp,Su). Prerequisite: Minimum 2.0 in CJUS 106 or concurrently and Department Approval. Course Note: Department approval requires a completed application submitted to the Public Service Careers Office. Worksite placements must be approved by the instructor. Students will be notified by phone upon acceptance into the course.
CJUS287	Juvenile Internship II	3	The student will be placed in a residential facility with juveniles who have been adjudicated by the court to be detained in a secure environment for treatment and rehabilitation purposes. (F,Sp,Su). Prerequisite: Minimum 2.0 in CJUS 286 and (CJUS 133 or concurrently) and Department Approval. Recommended: For Juvenile Justice/Juvenile Specialization students. Course Note: Department approval requires a completed application submitted to the Public Service Careers Office. Worksite placements must be approved by the instructor. Students will be notified by phone upon acceptance into the course.
CJUS288	Corrections Internship	3	The student will be placed in a local or state corrections facility that will allow him or her to experience many facets of correction operations. Weekly written reports are required and periodic meetings are mandatory. A minimum of 160 hours is required. (F,Sp,Su). Prerequisite: Department Approval. Course Note: Departmental approval requires a completed application submitted to the Public Service Careers Office. Worksite placements must be approved by the instructor. Students will be notified by phone upon acceptance into the course.
CJUS295	Criminal Justice Special Topic	.25 to 8	This course offers students the opportunity to learn new criminal justice career skills and knowledge. Specific up-to-date content will vary with each topic presented and will be related to criminal justice careers. (F,Sp,Su). Prerequisite: Determined by Section.
CPSC120	Introduction to Computers	3	In this survey course, the student learns of the application of computers in society, considers their social and economic implications, examines questions of privacy and security, and considers recent advances in computer technology. In addition, the student is exposed to beginning instruction and practice in word processing, spreadsheet and database applications, programming, and user networks. (F,Sp,Su). Prerequisite: Reading Level 5 and Writing Level 4.

COURSE	TITLE	CREDIT HOURS	TEXT
CPSC131	Numerical Methods and MATLAB	3	This course uses spreadsheets, MATLAB, and numerical methods for technical problem solving in engineering, mathematics and science. Develops and uses mathematical models combining computation, visualization, data representation, curve fitting, analysis, and programming to allow problem solving in many different areas with emphasis on engineering systems. Uses team-based projects to apply principles. (F,Sp). Prerequisite: (Minimum 2.0 in MATH 151 or MATH 161 or concurrently) and Reading Level 5 and Writing Level 6.
CPSC227	Algorithm & Computing w/Python	4	Students design, implement and test programs to solve a wide range of problems using a modern programming language Python. Topics include program development, functions, control structures, string manipulation, data types/classes, recursion, lists, tuples, dictionaries and object based programming. Object orientation and data abstraction/information hiding is emphasized. (F,Sp). Prerequisite: (Minimum 2.0 in MATH 151 or MATH 161 within 2 years or concurrently) and Reading Level 5 and Writing Level 4.
CPSC230	Algorithms and Computing w/C++	4	This course establishes fundamental computational techniques required for continuing study in computer science. Students design, implement and test C++ programs to solve a wide range of problems. Topics include program development, functions, control structures, text file operations, data types/classes, recursion, STL string/vector<T> classes, arrays, and pointer variables. Object orientation and data abstraction/information hiding is emphasized. (F,Sp,Su). Prerequisite: (Minimum 2.0 in MATH 151 or MATH 161 or concurrently) and Reading Level 5 and Writing Level 4.
CPSC231	Computing and Data Structures	4	Data abstraction and related theory for representation and access of information using C++. Algorithms and abstract data structures such as linked lists, the stack, queue, binary search tree, heap and priority queue are studied. (F,Sp). Prerequisite: Minimum 2.0 in CPSC 227 or CPSC 230 and Reading Level 5 and Writing Level 4.
CPSC260	Computer Science Structures	4	Introduction to logical and algebraic structures and techniques required for further study in computer science. Topics include statement logic and proof techniques, combinatorics, algorithms and their analysis, directed and undirected graphs and their matrix representations, Boolean algebras and logic networks, regular expressions, finite-state machines, and Turing machines. (Sp). Prerequisite: Minimum 2.0 in (CPSC 227 or CPSC 230) and (MATH 151 or MATH 161) and Reading Level 5 and Writing Level 4.
CPSC295	Ind Study in Computer Science	1 to 4	An opportunity for self-directed learners to explore topics related to, but not taught in the curriculum. Students spend at least two hours per week for each credit. A detailed proposal must be submitted by the student for approval by the Department and supervising instructor prior to registration. (F,Sp,Su). Prerequisite: Department Approval.
CSEM100	Computer Related Seminar	.25 to 5	This course will cover a variety of topics in computer related fields. For individuals already employed in the environment seeking to upgrade their skills or anyone looking to be employed in a particular career field. (F,Sp,Su). Prerequisite: None.
DANC101	Beginning Ballet	2	Designed for students with no dance experience. Included are examination of the history of Ballet, dance anatomy and injury prevention in addition to basic barre and center floor combinations, alignment principles, ballet vocabulary and steps, and elementary combinations of ballet technique for the beginning student. (F,Sp).Prerequisite: None.
DANC102	Beginning Modern	2	Designed for the students with no dance experience. Basic examination of the history of Modern dance, training in dance anatomy, injury prevention, alignment techniques, spatial relationships, and elementary combinations will be explored. Improvisation will be used throughout the course to assist in developing kinesthetic, spatial, cognitive, and physical awareness. (F,Sp). Prerequisite: None.
DANC103	Beginning Jazz	2	Designed for the student with no dance experience. Included are examination of the history of Jazz, training in dance anatomy and injury prevention. Basic alignment, warm-up, and isolations in jazz dance technique for beginning dance students are emphasized in addition to spatial relationships and rhythm. (F,Sp). Prerequisite: None.
DANC104	Beginning Tap	2	Designed for the student with no dance experience. Included are an examination of the history of Tap as well as training in dance anatomy and injury prevention. Basic vocabulary, steps, combinations, and rhythms are explored in addition to spatial relationships. (F,Sp). Prerequisite: None.
DANC105	Beginning Jazz-Summer	1	This course is designed for the student with no dance experience. Topics included are: basic alignment, warm-up, and isolation in jazz dance technique for beginning dance students. Spatial relationships and rhythm are emphasized. (Su). Prerequisite: None.
DANC106	Beginning Tap-Summer	1	This course is designed for the student with no dance experience. Topics included are: basic tap origins, vocabulary, steps, combinations, and rhythms for the beginning dance students. Basic alignment training techniques, spatial relationship, and elementary combinations are explored. (Su). Prerequisite: None.

COURSE	TITLE	CREDIT HOURS	TEXT
DANC107	Beginning Ballet-Summer	1	This course is designed for the student with no dance experience. Topics included are: basic alignment principles, ballet vocabulary and steps, and elementary combinations of ballet technique for the beginning dance student. Basic barre and center floor combinations will be included. (Su). Prerequisite: None.
DANC108	Beginning Modern-Summer	1	This course is designed for the student with no dance experience. Topics included are: basic alignment training techniques, spatial relationships, and elementary combinations. Some improvisation will be used throughout the course to assist in developing kinesthetic, spatial, cognitive, and physical awareness. (Su). Prerequisite: None.
DANC161	Dance Repertory	.25 to 1	This course is designed for the student who has reached a level of dance technique that will adequately support his/her participation in the concert process. This process includes auditions, rehearsals, and public performances in various dance genres and concentrates on memorization, projection, and musicality. (Sp). Prerequisite: Department Approval.
DANC201	Intermediate Ballet	3	This course includes a continuation of movement theory, alignment, increased training practices, vocabulary, and longer combinations. Emphasis is placed on center floor transitional techniques, dance dynamics, and development of personal movement style in preparation for performance. Intermediate concepts in Ballet history and choreography are explored. Pointe shoes are optional. (F,Sp). Prerequisite: Minimum 3.5 in DANC 101 or Dance Audition for Intermediate Ballet.
DANC202	Intermediate Modern	3	This course includes a continuation of alignment training, spatial relationships, choreography, improvisation, concepts in Modern Dance history, vocabulary, and longer combinations. Emphasis is placed on center floor transitional techniques, dance dynamics, examination and practice of movement qualities, and development of a personal movement style in preparation for performance. (F,Sp). Prerequisite: Minimum 3.5 in DANC 102 or Dance Audition for Intermediate Modern.
DANC203	Intermediate Jazz	3	This course includes a continuation of alignment training, movement theory, increased training practices, isolations, and longer combinations. Emphasis is placed on jazz dance dynamics, center floor transitional techniques, and development of a personal movement style in preparation for performance. Intermediate concepts in Improvisation, Choreography and Jazz Dance History are explored. (F,Sp). Prerequisite: Minimum 3.5 in DANC 103 or Dance Audition for Intermediate Jazz.
DANC204	Intermediate Tap	3	This course includes a continuation of tap vocabulary, steps, combinations, and rhythms. Emphasis is placed on increased complexity in rhythms and combinations, and development of a personal movement style in preparation for performance. Intermediate concepts in the history of tap, improvisation and choreography are explored. (F,Sp). Prerequisite: Minimum 3.5 in DANC 104 or Dance Audition for Intermediate Tap.
DANC207	Intermediate Ballet-Summer	1.5	This course includes a continuation of movement theory, alignment, increased training practices, vocabulary, and longer combinations. Emphasis is placed on center floor transitional techniques, dance dynamics and development of a personal movement style in preparation for performance. Intermediate concepts in Ballet history and choreography are explored. Pointe shoes are optional. (Su). Prerequisite: Minimum 3.5 in DANC 101 or Dance Audition for Intermediate Ballet.
DANC290	Dance Studio Internship	2	Designed for dance students to work with a local professional dance company/dance school. Opportunities include: Advanced dance classes with company members, learning company choreography, experience teaching methodologies, exposure to business aspects of a studio and the arts administrative processes including grant writing. (F,Sp). Prerequisite: Department Approval.
DCTM150	Civil Construction Materials	3	Students will study techniques and equipment used in constructing bridges, highways, industrial facilities, and pipelines to include determination of properties of soils, aggregates, concrete and other bituminous materials. This class includes coverage of methods of sampling and testing materials. (Sp). Prerequisite: Minimum 2.0 in (MATH 114 or Math Level 5) and Reading Level 4.
DCTM200	Construction Management I	4	This course introduces basic concepts of construction project management. Upon completion of this course, students will have basic knowledge of construction estimating and accounting, construction planning and scheduling, and construction law. Completion of this class will help the student prepare for the Part I of the Certified Professional Constructor examination. (F, Sp). Prerequisite: Minimum 2.0 in (ACCG 101 and (ARCH 116 or (ARCH 113 or concurrently) and Reading Level 5 and Writing Level 6. Recommended: ARCH 125 .

COURSE	TITLE	CREDIT HOURS	TEXT
DCTM201	Construction Management II	4	This course introduces advanced concepts of construction project management. Upon completion of this course, students will have functional knowledge of construction estimating and accounting, construction planning and scheduling, and construction law. Completion of this class will help the student prepare for the Part II of the Certified Professional Constructor examination. (F, Sp). Prerequisite: Minimum 2.0 in (DCTM 200 and (MATH 115 or Math Level 6)) and Reading Level 5 and Writing Level 6. Recommended: ARCH 125.
DENT140	Oral Histology & Embryology	2	This course provides an introduction and description of general histology and embryology with emphasis on the microscopic structures of enamel, dentin, pulp, cementum, periodontal ligament, bone, oral mucosa, epithelial attachment and orofacial structures. (F). Prerequisite: Admission to Dental Hygienist Program. Co-Requisite Course(s): DENT 142 and DENT 144 and DENT 146 and DENT 148.
DENT142	PreClinical Dental Hygiene	3	This course is offered concurrently with DENT144 to provide dental hygiene students with the introductory knowledge, skills and attitudes to function in the clinical setting and be able to continue in clinical dental hygiene courses. Emphasis is placed on scientific principles and current theory, prevention of disease transmission, ethical and professional treatment of patients, clinical learning preparation, and comprehensive care of the patient. (F). Prerequisite: Admission to Dental Hygienist Program. Co-Requisite Course(s): DENT 140 and DENT 144 and DENT 146 and DENT 148.
DENT144	PreClinic Dental Hyg Practice	2	This course is offered concurrently with DENT142 to provide clinical application to basic theories and procedures used in dental hygiene practice. The primary emphasis is on the techniques of instrumentation used in performing diagnostic, preventive and therapeutic services utilized when providing comprehensive patient care. The dental hygiene student will have an opportunity to practice these techniques on manikins and student partners in the clinic. (F). Prerequisite: Admission to Dental Hygienist Program. Co-Requisite Course(s): DENT 140 and DENT 142 and DENT 146 and DENT 148.
DENT146	Head, Neck & Oral Anatomy	4	This course provides a detailed study of nomenclature, morphologic characteristics, and physiologic relationships of human primary and permanent teeth. Head and neck anatomy is also studied and is related to the clinical practice of dental hygiene. Laboratory activities develop observation and dexterity skills while studying this information. (F). Prerequisite: Admission to Dental Hygienist Program. Co-Requisite Course(s): DENT 140 and DENT 142 and DENT 144 and DENT 148.
DENT148	Dental Radiography	3	This course provides a study of radiation physics, hygiene, and safety theories. Emphasis is placed on the fundamentals of oral radiographic techniques and interpretation of radiographs. Course content includes exposure of intra-oral radiographs, quality assurance, radiographic interpretation, patient selection criteria, and other ancillary radiographic techniques. (F). Prerequisite: Admission to Dental Hygienist Program. Co-Requisite Course(s): DENT 140 and DENT 142 and DENT 144 and DENT 146.
DENT152	Dental Hygiene I	2	This course is a continuation of information designed to provide an opportunity to enhance performance of procedures in a clinical setting. Emphasis will be placed on emergency care, planning dental hygiene care, health promotion and disease prevention, oral rehabilitation and care of appliances, and modifications of dental hygiene care for specific patient populations. (Sp). Prerequisite: Minimum 2.5 in (DENT 140 and DENT 142 and DENT 144 and DENT 146 and DENT 148). Co-Requisite Course(s): DENT 154 and DENT 156 and DENT 158 and DENT 161.
DENT154	Clinical Dental Hygiene I	2.5	This course provides an introduction to the clinic and patient, clinical skills, patient assessment, treatment and appointment scheduling, preventive techniques and application of dental hygiene procedures in the clinical setting. Practical experience is simultaneously related to theory. Direct supervision is provided by clinical faculty. (Sp). Prerequisite: Minimum 2.5 in (DENT 140 and DENT 142 and DENT 144 and DENT 146 and DENT 148). Co-Requisite Course(s): DENT 152 and DENT 156 and DENT 158 and DENT 161.
DENT156	Nutrition	3	This course discusses the identification, function, metabolism, and sources of specific nutrients required for normal growth, development, and repair of tissues. Application of principles to the individual's nutritional needs, providing nutritional counseling and diet information to special needs patients, and the relationship of nutrition to oral health are emphasized. (Sp). Prerequisite: Minimum 2.5 in (DENT 140 and DENT 142 and DENT 144 and DENT 146 and DENT 148). Co-Requisite Course(s): DENT 152 and DENT 154 and DENT 158 and DENT 161.
DENT158	Dental Pharmacology	3	A study of the importance of the pharmacologic aspects of those drugs and drug groups with which the dentist and dental hygienist are directly and indirectly concerned. Emphasis is placed on nomenclature, origin, physical and chemical properties, preparation, modes of administration, and effects upon the body systems. (Sp). Prerequisite: Minimum 2.5 in (DENT 140 and DENT 142 and DENT 144 and DENT 146 and DENT 148). Co-Requisite Course(s): DENT 152 and DENT 154 and DENT 156 and DENT 161.

COURSE	TITLE	CREDIT HOURS	TEXT
DENT161	Principles of Periodontics	3	This course provides a study of the normal and diseased periodontium to include the structural, functional, and environmental factors. Emphasis is placed on etiology, pathology, evaluation of disease, treatment modalities, and therapeutic and preventive periodontics relative to the hygienist's role as a co-therapist in a contemporary practice setting. (Sp). Prerequisite: Minimum 2.5 in (DENT 140 and DENT 142 and DENT 144 and DENT 146 and DENT 148). Co-Requisite Course(s): DENT 152 and DENT 154 and DENT 156 and DENT 158.
DENT174	Clinical Dental Hygiene II	1	This course provides a continuation of clinical skills, patient assessment, treatment and appointment scheduling, preventive techniques and application of dental hygiene procedures. Work-based instruction helps students synthesize new knowledge, apply previous knowledge, and gain experience managing workflow. Practical experience is simultaneously related to theory. Direct supervision is provided by clinical faculty in a clinical setting. (Su). Prerequisite: Minimum 2.5 in (DENT 152 and DENT 154 and DENT 156 and DENT 158 and DENT 161). Co-Requisite Course(s): DENT 176.
DENT176	Dental Materials & Methods	3	This course provides a study of the composition, chemical and physical properties, manipulation, and uses of dental materials. Laboratory experiences include the application and manipulation of various materials used in dentistry. (Su). Prerequisite: Minimum 2.5 in (DENT 152 and DENT 154 and DENT 156 and DENT 158 and DENT 161). Co-Requisite Course(s): DENT 174.
DENT240	Anxiety & Pain Control Mgmt	3	This course will provide the student with basic and current concepts of local anesthetics nitrous oxide and pain control for the safe and effective administration of local anesthetics and nitrous oxide/oxygen sedation. Instruction in local anesthetic technique, nitrous oxide technique, and an introduction to the use of nitrous oxide as an analgesia is included. (F). Prerequisite: Minimum 2.5 in (DENT 174 and DENT 176). Co-Requisite Course(s): DENT 242 and DENT 244 and DENT 247 and DENT 248.
DENT242	Dental Hygiene III	2	This course is a continuing development of a theoretical framework of dental hygiene treatment with advancement of dental hygiene proficiency in all areas of dental hygiene treatment. Case histories from patients are presented and discussed along with preventive measures employed against disease concurrent with clinical practice, with emphasis on special needs patients. (F). Prerequisite: Minimum 2.5 in (DENT 174 and DENT 176). Co-Requisite Course(s): DENT 240 and DENT 244 and DENT 247 and DENT 248.
DENT244	Clinical Dental Hygiene III	3.5	The clinical sessions combine dental hygiene skills with time management techniques essential for private practice. Comprehensive patient care includes assessment, diagnosis, treatment planning, implementation and evaluation of dental hygiene care, nonsurgical periodontal therapy, ultrasonic instrumentation, patient management, sealants, and comprehensive programs for control of dental diseases. The course consists of faculty supervised patient treatment in the clinic. (F). Prerequisite: Minimum 2.5 in (DENT 174 and DENT 176). Co-Requisite Course(s): DENT 240 and DENT 242 and DENT 247 and DENT 248.
DENT247	Oral Pathology	3	This course is a study of the diseases affecting oral tissues, including the principles of inflammation and repair, developmental disturbances, stains and accretions, diseases of the teeth and supporting structures, oral infection, injuries and neoplasms. (F). Prerequisite: Minimum 2.5 in (DENT 174 and DENT 176). Co-Requisite Course(s): DENT 240 and DENT 242 and DENT 244 and DENT 248.
DENT248	Dental Public Health & Educ	3	This course provides a study of the principles and concepts of community public health and dental health education. Emphasis is placed on dental epidemiology and statistical methods, community assessment, educational planning, implementation, and evaluation, scientific review of literature, and classroom presentation. (F). Prerequisite: Minimum 2.5 in (DENT 174 and DENT 176). Co-Requisite Course(s): DENT 240 and DENT 242 and DENT 244 and DENT 247.
DENT250	Oral Health Psychology	2	This course is an introduction to the understanding of relationships between oral health and one's behavior. Emphasis is placed on the identification of personal and environmental factors that impact oral health and the application of behavioral science to maximize health and oral health. (Sp). Prerequisite: Minimum 2.5 in (DENT 240 and DENT 242 and DENT 244 and DENT 247 and DENT 248). Co-Requisite Course(s): DENT 252 and DENT 254 and DENT 256.
DENT252	Dental Hygiene IV	2	This course is a continuation of information to prepare the student for advanced clinical practice. An in-depth study of dental hygiene care for patients with special needs is provided along with an examination of the dental hygienist's role in practice settings and employment considerations. Resume preparation, job interviewing, employment preparation, and an understanding of the law and professional ethics of dental hygiene are covered. (Sp). Prerequisite: Minimum 2.5 in (DENT 240 and DENT 242 and DENT 244 and DENT 247 and DENT 248). Co-Requisite Course(s): DENT 250 and DENT 254 and DENT 256.

COURSE	TITLE	CREDIT HOURS	TEXT
DENT254	Clinical Dental Hygiene IV	3	The clinical session combines dental hygiene skills with time management techniques essential for private practice. Comprehensive patient care includes assessment, diagnosis, treatment planning, implementation and evaluation of dental hygiene care, nonsurgical periodontal therapy, ultrasonic instrumentation, patient management, sealants, and comprehensive programs for control of dental diseases. The course consists of faculty supervised patient treatment in the clinic. (Sp). Prerequisite: Minimum 2.5 in (DENT 240 and DENT 242 and DENT 244 and DENT 247 and DENT 248). Co-Requisite Course(s): DENT 250 and DENT 252 and DENT 256.
DENT256	Community Oral Health	2	Students assess, plan, implement, and evaluate a community dental health project. Dental specialties and the dental hygienist's role in recognizing specialty care needed by patients is presented. Each student participates in a variety of community health projects and observing in dental specialty practices. (Sp). Prerequisite: Minimum 2.5 in (DENT 240 and DENT 242 and DENT 244 and DENT 247 and DENT 248). Co-Requisite Course(s): DENT 250 and DENT 252 and DENT 254.
DENT280	Dental Auxiliary Special Topic	.25 to 8	This course offers students the opportunity to learn new skills and knowledge related to dental hygiene and/or dental assisting. Specific up-to-date course content will vary with each offering and will be related to the dental team, dental hygiene, and/or dental assisting procedures. (F,Sp,Su). Prerequisite: Determined by Section.
DENT290	Directed Study	.5 to 3	This course provides selection of content from the Dental Hygienist curriculum to update or enhance current knowledge and skill for returning students and health care professionals. Through evaluation of previous learning, examinations, self study, and scheduling into needed lectures and labs, students are advanced-placed or readmitted into the Dental Hygienist Program. (F,Sp,Su). Prerequisite: Department Approval.
DMAC120	Digital Audio Production I	4	A hands-on, practical application course, students will learn the fundamental concepts of recording voice over and on-location interviews, sound effects, as well as computer based audio editing, mixing and producing programs suitable for mobile media applications. Digital Audio Production I is the audio foundation course required of all DMAC students. (F,Sp,Su). Prerequisite: Reading Level 5 and Writing Level 6.
DMAC121	Digital Audio Production II	4	Students will develop skills in computer-based editing, arranging, mixing and publishing of audio programming. Upon successful completion of this course, the student will be well prepared to pursue Digidesign certification for Pro Tools Operator or Pro Tools Music programs through a Digidesign training partner facility. (F,Sp). Prerequisite: Minimum 2.0 in (DMAC 120 or MUSC 197) and Reading Level 5 and Writing Level 6
DMAC122	Audio Recording I	4	This course introduces the concepts of multi-track audio recording for music and entertainment production. Students will gain a comprehensive understanding of 1) the audio recording chain, signal path, console design/operation, 2) microphone design and placement to optimize audio recording, 3) application of basic signal processing, and 4) studio acoustics. (F,Sp). Prerequisite: Minimum 2.0 in DMAC 120 or MUSC 197 and Reading Level 5 and Writing Level 6.
DMAC130	Digital Video Production	4	A hands-on, practical application course, students will learn the fundamental concepts of digital video production. Hands-on classroom exercises will include basic non-linear editing, lighting, videography/cinematography, DVD authoring, and the distribution of digital media. Digital Video Production is the video foundation course required of all DMAC students. (F,Sp,Su). Prerequisite: Reading Level 5 and Writing Level 6.
DMAC131	Digital Cinematography I	4	This intermediate digital cinematography course focuses on compositional techniques and single camera media/cinema production. Hands-on classroom exercises will include basic blocking, continuity, composition, camera angles, and shooting for the edit. Based upon these exercises, students will create several short form projects deliverable in a variety of digital formats. (F,Sp,Su). Prerequisite: Minimum 2.0 in DMAC 130 and Reading Level 5 and Writing Level 6.
DMAC132	Video Post-Production I	4	A hands-on course, Video Post-Production I will present the student with an extensive experience in non-linear post-production using a computer-based editing platform. Learning activities within and outside the classroom are designed to provide a technical and creative foundation in the procedures used by video and digital cinema editors. (F,Sp). Prerequisite: Minimum 2.0 in DMAC 130 and Reading Level 5 and Writing Level 6. Recommended: DMAC 140.
DMAC140	Pre-Production Design	3	This introductory course focuses on the fundamental concepts of pre-production design. Hands-on classroom exercises will find students creating a variety of pre-production materials including storyboards, scripts, treatments, project request forms, project budget forms, site survey form, pre-production checklist, production schedules, etc. Pre-Production Design is required of all DMAC students. (F,Sp). Prerequisite: Reading Level 5 and Writing Level 6.

COURSE	TITLE	CREDIT HOURS	TEXT
DMAC141	Ethics and Impact of the Media	3	This course explores the effects of the Cinema and Mass Media on American culture and society. Topics such as privacy, censorship, violence and portrayals of minorities and women are discussed and analyzed. These discussions take place within an ethical reasoning framework. (F,Sp).Prerequisite: Reading Level 5 and Writing Level 6.
DMAC221	On-Location Audio Recording	3	On-Location Audio Recording presents unique challenges to the audio professional. In DMAC 221, students will learn advanced techniques for recording the "club" atmosphere of a live band, or recording double system sound for a film/video production crew. This course provides essential instruction for employment as a professional audio recording engineer. (F). Prerequisite: Minimum 2.0 in DMAC 120 and Reading Level 5 and Writing Level 6. Recommended: DMAC 122 or concurrently.
DMAC222	Audio Recording II	4	An advanced recording course that provides in-depth instruction on signal calibration, microphone placement techniques for electronic (guitar) aggressive (brass) and complex (drums) instruments, surround sound recording, advanced signal processing, cable construction/soldering, and studio business operations. Additionally, console automation, routing, digital patch bays, and surround sound mixing will be discussed. (Sp). Prerequisite: Minimum 2.0 in (DMAC 120 and DMAC 121 and DMAC 122) and Reading Level 5 and Writing Level 6. Recommended: DMAC 130 and DMAC 140.
DMAC223	Sound Design for Video/Cinema	3	This course focuses on sound design for animation, video, cinema and web applications. Producers and Editors can significantly enhance the impact of a production by using clip media in soundtrack design. Instruction on recording or developing sound clip files to be used as sonic support for visual media applications. (Sp). Prerequisite: Minimum 2.0 in (DMAC 120 and DMAC 121 and DMAC 122) and Reading Level 5 and Writing Level 6. Recommended: DMAC 132 or concurrently.
DMAC231	Digital Cinematography II	4	This advanced digital cinematography course focuses on studio/remote lighting techniques. Hands-on classroom exercises will include lighting for product advertising, corporate programming, news interviews/stand-ups, and narrative/documentary cinema. Based upon these exercises, students will create several short form projects deliverable in a variety of digital formats. (F,Sp). Prerequisite: Minimum 2.0 in DMAC 131 and Reading Level 5 and Writing Level 6.
DMAC232	Video Post-Production II	4	Video Post-Production II focuses on the advanced technical, creative, and design issues of non-linear editing. Hands-on classroom exercises will include video compositing, color correction, advanced effects, media management, and networking. Based upon these exercises, students will manage and edit several short form projects deliverable in a variety of digital formats. (F,Sp). Prerequisite: Minimum 2.0 in DMAC 132 and Reading Level 5 and Writing Level 6.
DMAC234	Studio Production Techniques	4	This practical application course focuses on the fundamental concepts of television studio production. Hands-on classroom exercises will find students operating in a variety of production roles including but not limited to director, technical director, camera operator, graphics operator, audio engineering, floor director, etc. (F,Sp). Prerequisite: Minimum 2.0 in (DMAC 120 and DMAC 130 and DMAC 140) and Reading Level 5 and Writing Level 6.
DMAC235	New Media Design/Distribution	4	This hands-on practical application course focuses on new media design and distribution. Special emphasis is placed on video/audio compression, distribution techniques (web, iPod, mobile phone, and DVD), basic interface design, usability testing, and project planning. (F,Sp). Prerequisite: Minimum 2.0 in (ARTS 102 or DMAC 130) and Reading Level 5 and Writing Level 6.
DMAC240	Employment Issues in Media	2	This self-exploration course will develop an individual's understanding of media industry issues related to organizational and self employment. Class sessions and assignments contain practical exercises aimed at developing the individual's employability skills. Several guest speakers will be incorporated into the course content. (F,Sp). Prerequisite: Minimum 2.0 in (DMAC 120 and DMAC 130 and DMAC 140) and Reading Level 5 and Writing Level 6.
DMAC242	Broadcast Station Operations	2	Through this course students will develop an understanding of broadcast station operations and skills necessary for entry-level industry employment. Additional topics include a look at the interconnectedness in employment skills between broadcast and non-broadcast media industries. Several guest speakers and field trips are included within this course. (F,Sp). Prerequisite: Minimum 2.0 in (DMAC 120 and DMAC 130 and DMAC 140) and Reading Level 5 and Writing Level 6.
DMAC244	Media/Cinema Producer	3	This practical application course focuses on the role and responsibilities of the media/cinema producer. Through collaborative group work, students will produce a variety of "theme based" media/cinema projects. Special emphasis is placed on project development, marketing, distribution, and legal issues. (F,Sp).Prerequisite: Minimum 2.0 in (DMAC 120 and DMAC 130 and DMAC 140) and Reading Level 5 and Writing Level 6.
DMAC245	Workshop: Audio	2	A practical production course in which students will, under the supervision of an audio faculty member, create either 1) an informational series of audio programs on topics that are of interest to the regional, local or college community, or 2) a series of dramatic/entertainment vignettes using existing rights-acquired scripts. (F,Sp). Prerequisite: Department Approval.

COURSE	TITLE	CREDIT HOURS	TEXT
DMAC246	Workshop: Video	2	A practical application course in which students will, under the direct supervision of a faculty member, work as a member of a video production team to create professional video programming. Students may serve in a variety of production roles including videographer, videotape operator, technical director, floor director, etc. (F,Sp). Prerequisite: Department Approval.
DMAC247	Workshop: Cinema	2	A practical application course in which students will, under the direct supervision of a faculty member work as a member of a "cinema style" production unit to create an entertainment/informational based project, including but not limited to music videos, narrative shorts, documentary shorts, public service announcements, etc. (F,Sp). Prerequisite: Department Approval.
DMAC250	Special Topics	1 to 4	This course offers the opportunity to learn new techniques in digital media production and distribution. Specific up-to-date content will vary with each offering and will be related to the digital media, audio and cinema profession. (F,Sp,Su). Prerequisite: Department Approval.
DMAC260	World Cinema	4	This course focuses on cinema from a global perspective. It provides a survey of world cinema by exposing students to pre-eminent international filmmakers and film movements. It explores social, political, economic and historical contexts pertaining to film production to create an understanding of the relationship between cinema and national culture. (F,Sp). Prerequisite: Reading Level 5 and Writing Level 6.
DMAC261	Scriptwriting	4	This course focuses on the fundamental concepts of scriptwriting with emphasis placed on structure, plot and character development, theme, dialogue, and critical analysis. Hands-on classroom exercises include writing several short form scripts. Students will also examine "real world" applications such as script marketing, making a pitch, and copywriting their work. (F,Sp). Prerequisite: Reading Level 5 and Writing Level 6.
DMAC295	Media/Cinema Portfolio	2	The student will assemble a portfolio under faculty supervision that represents the student's attainment of DMAC program outcomes. The Portfolio created in this course can be used for securing employment or acceptance into a four-year school. This course is intended to be a capstone course in the DMAC curriculum. (Sp). Prerequisite: Department Approval
DMAC296	Media/Cinema Internship	3	This course provides an opportunity for students to work in external media or cinema settings under professional supervision. Students work closely with faculty in arranging and evaluating the workplace experience. Placement is contingent upon interview results between the student and interview site. (F,Sp,Su). Prerequisite: Department Approval. Restriction: Digital Media and Cinema Majors Only.
ECON120	Power, Authority and Exchange	4	A comparative study of ancient and modern economic and political systems and theories in different parts of the world. An emphasis will be placed on the evolution of economic and political organizations and the impact these have on societies and individuals. (F,Sp,Su). Prerequisite: Reading Level 5. Course Note: An online course may require students to travel to an exam site for proctored exams. If you live at least 60 miles from LCC's Main Campus you may request to test at an approved proctored location (additional fees may apply). For additional information please visit https://www.lcc.edu/services/testing/
ECON201	Principles of Economics-Micro	4	This course is designed to develop objective consideration of economic issues and provides information and understanding of how resources are allocated by prices. Topics for study include price theory, consumer demand, cost and market structure, the role of government in the market, resource pricing, and international trade. (F,Sp,Su). Prerequisite: Reading Level 5 and Math Level 4.
ECON202	Principles of Economics-Macro	4	This course addresses the theory of national income, employment and the price level, and government fiscal and monetary policies designed to influence aggregate economic activity. It also addresses exchange rates, international financial relationships, and economic growth. (F,Sp,Su). Prerequisite: ECON 201 or concurrently and Reading Level 5 and Math Level 4.
ECON213	U.S. Economic/Business History	3	This course provides a survey of American economic and business history, change, and growth since the colonial period. Topics include an overview of business organization, the role of government and technological change, American industrial development, labor unions, and capitalization patterns. (F). Prerequisite: Reading Level 5.
ECON260	Comparative Economic Systems	3	A comparison of different global economic systems and their impact on economic growth, distribution of income and opportunity, and economic treatment of women and minorities. Theories, philosophies, historical development and current practices will be examined. (Sp). Prerequisite: Reading Level 5.

COURSE	TITLE	CREDIT HOURS	TEXT
EDUC201	Intro to Education	3	This course requires students to work with a teacher in an educational setting, thus receiving practical experience working with children in a classroom. Combined with textbook readings, reflections, and on-campus classroom discussion, students should gain an appreciation for the role of professional teachers. (F,Sp). Prerequisite: Reading Level 5 and Writing Level 6. Course Note: This course requires 75 additional hours of practical experience in a K-12 classroom. Information on field placement and assignment will be given during the first day of class. All public schools are required to ask for a background check for anyone who regularly visits a K-12 school building. Students in EDUC 201, Education Practicum, should be prepared to present a completed ICHAT (online State background check) to their practicum site at the beginning of the assignment. Instructions for conducting this online background check may be found at https://www.lcc.edu/academics/education/education/ and click on Background Check.
EDUC204	Educational Psychology	3	Educational psychology examines the contribution of psychology to education, emphasizing childhood development, learning, motivation, measurement, and both individual and group dynamics that affect pupils' achievements. Research on specific programs and strategies designed to improve instruction and learning will be explored. This class is designed for potential certified teachers or paraprofessionals. (F,Sp,Su). Prerequisite: Reading Level 5 and Writing Level 6.
EDUC220	Introduction to Education	3	An overview of the foundations, philosophy, history and organization of education as a human endeavor and an introduction to education as a teaching profession. Topics include legal concerns, issues and trends in American education, school governance and school finance. (F,Sp,Su). Prerequisite: Reading Level 5 and Writing Level 6.
EDUC226	Reading in Elementary School	3	This course provides an introduction to concepts and issues in the reading development of elementary school children. Included are methods of reading instruction and assessment, and review of current school practices. Intended for teacher paraprofessionals, but may also be used for transfer to a teacher certification program. (F,Sp). Prerequisite: Reading Level 5 and Writing Level 6. Recommended: EDUC 220 and EDUC 204.
EDUC228	Technology in Education	3	In this survey course, students will learn sound principles for integrating technology and media into K-12 classrooms, legal and societal issues surrounding their use, and how to assess and select appropriate technology and media. Students will explore uses of productivity/presentation software and the internet/WWW to enhance their teaching. (F,Sp,Su). Prerequisite: Reading Level 5 and Writing Level 6. Recommended: EDUC 220 and (CPSC 120 or CABS 110).
EDUC230	Intro to Special Education	3	An introduction to Special Education for potential elementary or secondary teachers and teacher paraprofessionals. The physical, social, emotional and cognitive characteristics of special needs students are defined. Emphasis is placed on the disability categories addressed in state and federal special education mandates. (F,Sp,Su). Prerequisite: Reading Level 5 and Writing Level 6.
EDUC280	Teacher Education Practicum	3	This course requires students to work with a teacher in an educational setting, thus receiving practical experience working with children in a classroom. Combined with textbook readings, reflections, and on-campus classroom discussion, students should gain an appreciation for the role of professional teachers. (F,Sp). Prerequisite: Reading Level 5 and Writing Level 6. Course Note: This course requires 75 additional hours of practical experience in a K-12 classroom. Information on field placement and assignment will be given during the first day of class. All public schools are required to ask for a background check for anyone who regularly visits a K-12 school building. Students in EDUC 201, Education Practicum, should be prepared to present a completed ICHAT (online State background check) to their practicum site at the beginning of the assignment. Instructions for conducting this online background check may be found at https://www.lcc.edu/as/teaching-prep/ and link on Practicum Background Check.
ELTA101	Electrical Safety	1	This course covers basic electrical and general safety practices in the electrical laboratory, in construction and industry. An overview of OSHA and NFPA 70E are included. (F, Sp, Su). Prerequisite: Reading Level 3. Course Note: Enrollment in this class is limited to those students participating in an approved Related Trades Instruction program as part of a formal US Department of Labor apprenticeship. This is NOT a replacement for ELTE 102. Questions should be directed to the Electrical Program at (517) 483-1360.
ELTA105	Elect. Industry Orientation	0.5	An overview of laws and standards that apply to the electrical construction industry in the State of Michigan. (F, Sp, Su). Prerequisite: Reading Level 3.
ELTA106	Basic Electrical Calculations	2	Reviews mathematical concepts required of the apprentice electrician in his/her study of electrical theory: fractions applied in use of ruler and laying out components on the job; ratio, proportion, power and roots as used in Ohm's and Watt's Laws. Use of scientific calculators will be demonstrated and required in class. (F, Sp). Prerequisite: Reading Level 3 and Math Level 3.

COURSE	TITLE	CREDIT HOURS	TEXT
ELTA120	AC Fundamentals - Electrician	2	A practical approach to calculations of alternating current circuit quantities that an electrician may be required to use in the electrical trade. Impedance and power relationships will be explored for both single and three-phase circuits. (F, Sp). Prerequisite: Minimum 2.0 in (ELTE 110 or ELTE 118) and (minimum 3.0 in ELTA 106 or Math Level 4).
ELTA155	Transformer Fundamentals	1	This course covers alternating current transformers. Topics include operating principles, transformer calculations, single phase transformers, three phase transformers, autotransformers, and transformer connections. (F, Sp). Prerequisite: Minimum 2.0 in (ELTE 121 or (ELTA 120 or concurrently)).
ELTA160	PLC Overview for Electricians	1	This course provides a practical overview of programmable logic controllers with focus on operating principles and installation. Topics include the capabilities, installation, programming, (examine on/off, timers and counters) and connecting of external devices. (F, Sp). Prerequisite: Minimum 2.0 in ELTE 131.
ELTA180	Introduction to Fire Alarms	1	This course provides an introduction to the installation and operation of fire alarm systems. Topics covered include: wiring methods, components, circuit types, system types and code rules. (F, Sp). Prerequisite: Minimum 3.0 in (ELTA 160 or ELTE 260) and Reading Level 3 and Writing Level 2 and Math Level 3.
ELTE100	Electrical Safety Practices	1	This course covers basic electrical safety practices in the home, electrical laboratory and in construction and industry. Included are state and federal standards and practices. This course is a prerequisite for, or to be taken concurrently with, all ELTE courses that have a lab. (F,Sp,Su). Prerequisite: None.
ELTE100A	Electrical Concepts	0.25	This module provides an overview of electricity, electrical systems, and electric shock. (F,Sp,Su). Prerequisite: None.
ELTE100B	First Aid and CPR	0.25	This module provides a study of industrial accidents and what causes them, with an introduction of first aid and CPR training. (F,Sp,Su). Prerequisite: None.
ELTE100C	Safety and Fire Prevention	0.25	This module examines fire and fire fighting with portable extinguishers, and reviews other safety topics, relating them to Emergency Action Plans and housekeeping. (F,Sp,Su). Prerequisite: None.
ELTE100D	Industrial Work Practices	0.25	This module covers proper use of tools and equipment, safety colors and safety signs and tags. It explains lockout/tagout procedures and examines various electrical codes and standards, as well as OSHA and its relationship with the industrial environment. (F,Sp,Su). Prerequisite: None.
ELTE102	Industrial/Construction Safety	2	This course covers safety in the industrial workplace and on construction worksites. Included are local, state and federal safety regulations. The focus will be on the prevention of accidents but will teach the correct response if an accident should occur. First aid, CPR/AED certificates will be issued upon successful completion. (F, Sp, Su). Prerequisite: Reading Level 3 and Writing Level 2. Course Note: This course requires students to be certified in CPR and First Aid as part of the course grade. Training will occur as part of traditional on-campus sections. Online students have the option of attending CPR and First Aid sessions at LCC's West Campus. Students who cannot travel to LCC will need to make other arrangements to become certified.
ELTE110	Practical Electricity	3	This course introduces the student to electricity on a practical level. The student will learn to use meters to measure electrical quantities, do basic circuit calculations, install basic household electrical wiring and investigate the behavior of motors. Reviews electrical codes and standards. (F,Sp,Su). Prerequisite: Minimum 2.0 in (ELTA 101 or ELTE 100 or ELTE 102 or HVAC 102 or METS 102 or WELD 102 or concurrently) and Reading Level 3 and Writing Level 2 and (minimum 3.0 in ELTA 106 or Math Level 3). Recommended: Math Level 4 or MATH 050 concurrently.
ELTE110A	Electrical History/Fundmntls	0.25	This module places electrical theory in context by considering fundamental electrical principles and their discovery. (F,Sp,Su). Prerequisite: Minimum 2.0 in (ELTE 100 or ELTE 100A) or concurrently.
ELTE110B	Electrical Properties/Testers	0.3	This module builds the foundation for later studies of electricity uses by exploring manifestations and uses of electricity in nature and industry. Discussions of static electricity and magnetism are included. This unit builds on module 110A with an introduction to the use of basic meters to measure continuity, voltage and current. (F,Sp,Su). Prerequisite: Minimum 2.0 in ((ELTE 100 or ELTE 100A) and ELTE 110A) or concurrently.
ELTE110C	Series Circuits	0.3	In this module resistors and series DC circuit rules are studied, explored and applied via circuit calculations, connection of components and measurement of electrical quantities. (F,Sp,Su). Prerequisite: Minimum 2.0 in ((ELTE 100 or ELTE 100A) and ELTE 110B) or concurrently.

COURSE	TITLE	CREDIT HOURS	TEXT
ELTE110D	Parallel Circuits	0.2	In this module parallel DC circuit rules are studied, explored and applied via circuit calculations, connection of components and measurement of electrical quantities. (F,Sp,Su). Prerequisite: Minimum 2.0 in ((ELTE 100 or ELTE 100A) and ELTE 110B) or concurrently.
ELTE110E	Combination Circuits	0.4	In this module students gain a clearer understanding of series and parallel circuit rules as they apply them in solving and measuring combination circuits. (F,Sp,Su). Prerequisite: Minimum 2.0 in ((ELTE 100 or ELTE 100A) and ELTE 110C and ELTE 110D) or concurrently.
ELTE110F	Metering Equipment	0.3	In this module the principle of operation and safe measuring skills are emphasized in hands-on experience with a variety of test equipment. (F,Sp,Su). Prerequisite: Minimum 2.0 in ((ELTE 100 or ELTE 100A) and ELTE 110E) or concurrently.
ELTE110G	Voltage Sources	0.2	This module covers batteries and other sources of electricity as well as conductance in liquids and gases. (F,Sp,Su). Prerequisite: Minimum 2.0 in ((ELTE 100 or ELTE 100A) and ELTE 110E) or concurrently.
ELTE110H	Magnetism	0.3	This module provides an introduction to the relationship between alternating current and magnetism. Topics include motors, inductors and generators. (F,Sp,Su). Prerequisite: Minimum 2.0 in ((ELTE 100 or ELTE 100A) and ELTE 110E) or concurrently.
ELTE110I	Electrical Conductors	0.3	This module covers conductor material, insulation ratings and correct sizing based on loading and environmental factors. (F,Sp,Su). Prerequisite: Minimum 2.0 in ((ELTE 100 or ELTE 100A) and ELTE 110E) or concurrently.
ELTE110J	Intro to Residential Wiring	0.3	In this module basic lighting and receptacle circuits are discussed, designed and wired with an emphasis on the use of non-metallic cable. (F,Sp,Su). Prerequisite: Minimum 2.0 in ((ELTE 100 or ELTE 100A) and ELTE 110E and ELTE 110I) or concurrently.
ELTE110K	Intro to Services & Circuiting	0.2	This module addresses the key components of an electrical service as well as residential lighting and power circuit design. (F,Sp,Su). Prerequisite: Minimum 2.0 in ((ELTE 100 or ELTE 100A) and ELTE 110E and ELTE 110I) or concurrently.
ELTE110L	Codes, Licenses, Permits	0.15	This module provides students with an overview of the State of Michigan Electrical Licensing Law and Electrical Code Rules. (F,Sp,Su). Prerequisite: ELTE 110I or concurrently.
ELTE111	Intro to Industrial Automation	4	Provides a hands-on introduction to computer-based manufacturing through experiments and demonstrations. Topics include computer architecture, operating systems, the internet, text and spreadsheet processing, PLC's, machine vision, programming languages, discrete electronics, computer aided design and statistical process control. Emphasis placed on the integration of these systems and impact on human lifestyle. (F,Sp,Su). Prerequisite: Reading Level 3. Course Note: Student will be required to provide a 2 gigabyte memory stick (jump drive) with a USB port interface.
ELTE112	Basic Wiring Installation	2	This course covers installation of a variety of wiring systems in wood frame construction. Students will practice installing nonmetallic sheathed cable, electrical metallic tubing and residential services. (F,Sp,Su). Prerequisite: Minimum 2.0 in (ELTE 110 or HVAC 110). Course Note: Students will be required to provide hand tools not included in the course fee. A list of these tools will be provided at the first class meeting. Students enrolling in ELTE 110 during the Fall semester may also be able to enroll in the late start section of ELTE 112. Contact the Electrical Technology program at (517) 483-1360.
ELTE118	Electric Circuits Study	2	This course is intended for non-Electrical Technology majors in preparation for ELTE121. It gives students an introduction to electrical circuits and the use of meters to measure electrical quantities associated with them: voltage, current, resistance and power. (F,Sp,Su). Prerequisite: Minimum 2.0 in (ELTE 100 or ELTE 102 or HVAC 102 or METS 102 or WELD 102 or concurrently) and Reading Level 3 and Writing Level 2 and Math Level 3. Course Note: ELTE 118 is intended for non-majors that are preparing for ELTE 121 or for those students pursuing a curriculum that specifically lists ELTE 118. ELTE 118 is NOT a replacement for ELTE 110. If you have questions, contact the Electrical Program at 517-483-1360.
ELTE121	Electrical Mathematics	5	This course utilizes concepts in algebra, vector algebra and trigonometry to solve DC and AC electric circuit problems. Topics will include units, Ohm's Law, network analysis, series parallel and combination DC and AC circuits, inductance, capacitance, AC power relationships and power factor correction. (F,Sp). Prerequisite: Minimum 2.0 in (ELTE 100 or ELTE 102 or HVAC 102 or METS 102 or WELD 102) and (ELTE 110 or ELTE 118) and (minimum 2.0 in MATH 107 or MATH 114 or Math Level 5) and Reading Level 5.

COURSE	TITLE	CREDIT HOURS	TEXT
ELTE122	Industrial Control Electronics	5	This course introduces the student to solid-state circuitry used in industry. Students will study diodes, transistors, SCRs, triacs, optical isolators, transducers, power circuits, etc. Laboratory will include oscilloscope usage. The course also includes an introduction to Boolean algebra and digital circuits. (Sp). Prerequisite: Minimum 2.0 in (ELTE 111 and ELTE 121) and Reading Level 5 and Writing Level 2 and Math Level 5.
ELTE123	Motors and Transformers	5	This course begins with three-phase circuits, including three-phase power measurement. Contains practical introduction to single- and three-phase transformers, motors and alternators. Brief coverage of DC machines. (F). Prerequisite: Minimum 2.0 in ELTE 121.
ELTE131	Machine Controls I	4	Covers relay logic and controls using industrial standards. Use of correct symbols and standard construction of wiring and ladder diagrams is emphasized. Laboratory exercises include wiring three-phase motor control circuits utilizing two- and three-wire control and machine control circuits utilizing limit and proximity switches, timers, relays, etc. (F,Sp). Prerequisite: Minimum 2.0 in (ELTE 110 or ELTE 108 or ELTE 118).
ELTE131A	Control Circuit Systems	0.35	This module introduces the topic of control circuits by starting at the source of power. This unit moves from a basic review of electrical laws to cover the fundamentals of single and three phase power. The function of transformers, and control voltage transformers in particular, are also covered. (F,Sp,Su). Prerequisite: Minimum 2.0 in ELTE 110 or (minimum 4.0 in ELTE 110E and ELTE 110H or concurrently).
ELTE131B	Control Devices and Symbols	0.3	This module covers orientation to devices and corresponding symbols used in machine control. Proper nomenclature, standard colors and device designations are addressed using industry standards and the symbols used in control diagrams. Students will be introduced to different control diagram types and will work with these diagrams to connect circuits in the lab. (F,Sp,Su). Prerequisite: Minimum 4.0 in ELTE 131A or concurrently.
ELTE131C	Fundamentals/Control Diagrams	0.3	This module builds on the foundation of modules ELTE131A and ELTE131B to begin creating complete ladder diagrams. The focus of this unit is the structure, logical flow, rules and standards of building and using ladder diagrams. (F,Sp,Su). Prerequisite: Minimum 4.0 in ELTE 131B or concurrently.
ELTE131D	Basic Control Circuits	0.3	This module begins an exploration of useful control circuits and safety issues related to control by discussing 2- and 3-wire control circuits and the corresponding low-voltage-release/protection. Other control circuit applications are discussed by introducing new types of control devices. (F,Sp,Su). Prerequisite: Minimum 4.0 in ELTE 131C or concurrently.
ELTE131E	Contactors and Motor Starters	0.45	This module covers principles of motor operation including starting, normal and overloaded conditions and the required characteristics of control devices needed to operate and protect motors in industrial settings. (F,Sp,Su). Prerequisite: Minimum 4.0 in ELTE 131D or concurrently.
ELTE131F	Motor Control Circuits	0.6	This module applies the principles from ELTE131D and ELTE131E to build jogging and reversing circuits for motors. Plugging of motors, their control circuits and impact on the motor will be addressed in detail. (F,Sp,Su). Prerequisite: Minimum 4.0 in ELTE 131E or concurrently.
ELTE131G	Motion in Machine Control	0.4	This module covers contact and non-contact sensors, solenoid valves, and hydraulic/pneumatic systems. (F,Sp,Su). Prerequisite: Minimum 4.0 in ELTE 131F or concurrently.
ELTE131H	Timing in Machine Control	0.6	This module covers on- and off-delay timer relays. (F,Sp,Su). Prerequisite: Minimum 4.0 in ELTE 131G or concurrently.
ELTE131I	Basic Circuit Design	0.4	This module covers designing and documenting elementary control circuits by using the concepts learned in modules ELTE131A through ELTE131H. (F,Sp,Su). Prerequisite: Minimum 4.0 in ELTE 131H or concurrently.
ELTE131J	Troubleshooting Circuits	0.3	In this module students will apply troubleshooting standards to locate and correct faults in control circuits. In addition, students will study the difference between grounded and ungrounded control circuits and the purpose and operation of ground detection circuits. (F,Sp,Su). Prerequisite: Minimum 4.0 in ELTE 131I or concurrently.
ELTE132	Control Panel Assembly	2	This course provides practical experience in the construction of an industrial control panel. The student will layout, assemble, wire, connect, troubleshoot and operate an industrial control panel for an oscillating table drive. (F, Sp). Prerequisite: Minimum 2.0 in (ELTE 131 or concurrently) and Reading Level 3 and Writing Level 2 and Math Level 3.
ELTE136	Digital Basics	2	Introduces digital electronics basics: Binary number system, basic gates, and combination and sequential logic circuits. Laboratory work includes the analysis of digital circuits built on PC boards. (F,Sp). Prerequisite: Minimum 2.0 in ELTE 131 and Reading Level 5.

COURSE	TITLE	CREDIT HOURS	TEXT
ELTE141	National Electrical Code I	4	An introductory course designed for individuals with little or no knowledge of the Electrical Code. Students will study the structure and scope of the National Electrical Code, focusing on Chapters 1 through 4. These chapters constitute the general rules and most often used portion of the NEC. (F,Sp). Prerequisite: Minimum 2.0 in (ELTE 110 or HVAC 110). Course Note: Students with a minimum of one year of experience may request a waiver for the prerequisites of this class. Call (517) 483-1360 to request a waiver.
ELTE142	National Electrical Code II	4	This course builds on ELTE141 by applying the National Electrical Code to situations common to the practicing journey electrician. Extensive practice locating and interpreting sections of the NEC helps prepare students for the State Journey Examination. In addition to the NEC, State of Michigan electrical rules will be reviewed. (F,Sp). Prerequisite: Minimum 2.0 in ELTE 141. Course Note: Students with a minimum of two years experience and a previous course in the National Electrical Code may request a waiver for the prerequisites of this class. Call (517) 483-1360 to request a waiver.
ELTE143	National Electrical Code III	4	For individuals with National Electrical Code experience and practical electrical knowledge. Students will apply the National Electrical Code to problems, discuss interpretation of the NEC, study Michigan electrical and construction code rules and discuss topics appropriate to the Master's Exam and the Contractor's Exam. (Sp). Prerequisite: Minimum 2.0 in ELTE 142. Course Note: Students with a minimum of three years of experience may request a waiver for the prerequisites of this class. Call (517) 483-1360 to request a waiver.
ELTE145	Electrical Prints for Building	4	Covers construction prints emphasizing standard and nonstandard symbols and interpretation of prints. Uses the National Electrical Code to calculate branch circuit, motor circuit, and feeder sizes. Other topics include industrial loads, uninterruptible power supplies, and signaling systems. (F). Prerequisite: Minimum 2.0 in ELTE 141 . Recommended: Minimum 2.0 in ELTE 121 or equivalent.
ELTE147	National Electric Code Update	1	For individuals with National Electrical Code® experience and practical electrical knowledge and hold a journeyman electrician's license, a master electrician's license or a fire alarm specialty technician's license. Students will cover changes to the National Electrical Code® and discuss interpretation of the Code changes. (F, Sp, Su). Prerequisite: None. Recommended: Experience using the National Electrical Code.
ELTE150	Electric Motor Maintenance	2	Students learn to diagnose and test electric motors. Students will learn to identify and repair common problems in motors using meters, test equipment and appropriate tools. An introduction to rewinding and metal working procedures is also included. (F,Sp). Prerequisite: Minimum 2.0 in (ELTE 110 or HVAC 110).
ELTE170	Special Topics/Electrical Tech	.25 to 8	This course offers students the opportunity to learn new or advanced skills in Electrical Technology and other related topics. Specific content may vary with each offering but will be related to the Electrical Technology program and the profession. (F,Sp,Su). Prerequisite: Determined by Section.
ELTE171	Special Topics/Electrical P/Z	.25 to 8	This course offers students the opportunity to learn new or advanced skills in Electrical Technology and other related topics. Specific content may vary with each offering but will be related to the Electrical Technology program and the profession. This course will be graded on a Pass/Fail basis. (F,Sp,Su). Prerequisite: Determined by Section.
ELTE232	Machine Controls II	4	This course is a continuation of ELTE131. Students will work with more components, larger and more complex machine control diagrams, automation interlocking, automatic continuous cycling of machinery, variable speed motor drives, design of control circuits for more complex machines, and the use of CAD for drawing electrical schematics. (F). Prerequisite: Minimum 2.0 in ELTE 131.
ELTE240	Electrical Estimating	3	Basics of preparing accurate, competitive electrical estimates for the building trades. Topics include take-off procedure using electrical, mechanical and architectural prints; lighting design; labor and materials cost and evaluation techniques and specifications. (Sp). Prerequisite: Minimum 2.0 in (ELTE 112 and ELTE 145).
ELTE251	Energy Generation & Control I	4	Provides students with a foundational understanding of electrical power generated by steam turbines, gas turbines, and reciprocating SI and CI engines. Prime movers, generators, governors, regulators and fault protection equipment are covered. Addresses both theory and practice of maintenance, operation, repair and installation of electrical generating systems and related components. (F). Prerequisite: Reading Level 3. Recommended: Minimum 2.0 in (ELTE 121 and ELTE 131 and ELTE 150) and (ELTE 123 or concurrently) Course Note: The textbook for ELTE 251 is purchased thru Electrical Generating Association (egse.org). Students can pick up an order form at West Campus in M127 or U206. Please allow enough time to receive the textbook before class begins.

COURSE	TITLE	CREDIT HOURS	TEXT
ELTE252	Energy Generation & Control II	4	Second in a two-course sequence addressing electrical power generation. Covers advanced concepts of the prime mover and the generator as well as associated governors, regulators and fault protection equipment. Students will learn both theory and practice of maintenance, operation, repair and installation of electrical generating systems and related components. (Sp). Prerequisite: Reading Level 3. Recommended: Minimum 2.0 in (ELTE 123 and ELTE 251)
ELTE255	Power Instrumentation	4	An introduction to the instrumentation and control of power generation and distribution. The application, calibration and use of smart meters, electronic power meters, potential and current transformers, switchboard instruments & controls, power equipment measurement/protection, temperature measurement, 4-20ma current loop systems and programmable energy meters are explored and applied. (Sp). Prerequisite: Reading Level 3. Recommended: ELTE 123 and ELTE 251 and ELTE 260.
ELTE260	Programmable Controllers I	4	This course covers programmable logic controllers with focus on common operating principles. Topics include the capabilities, similarities and differences among controllers, programming (examine on/off, timers and counters) and connecting external devices to Allen-Bradley, Modicon and Omron. (F). Prerequisite: Minimum 2.0 in ELTE 131. Course Fee: Students are required to provide a 2-gigabyte flash drive with USB interface.
ELTE260A	Introduction to PLCs - SLC500	0.5	This module provides an introduction to PLC hardware, software, and component connection to the PLC using the Allen Bradley SLC 500 processor. (F,Sp,Su). Prerequisite: Minimum 2.0 in ELTE 131 or (minimum 4.0 in ELTE 131J or concurrently).
ELTE260B	Relay Equiv. Instrument-SLC500	0.5	This module introduces instructions for reading digital input devices and controlling digital output devices. The Allen Bradley SLC 500 processor is used. (F,Sp,Su). Prerequisite: Minimum 4.0 in ELTE 260A or concurrently.
ELTE260C	Editing and Forcing - SLC500	0.5	This module introduces editing of existing PLC programs and forcing of instructions into the program. The Allen Bradley SLC 500 processor is used. (F,Sp,Su). Prerequisite: Minimum 4.0 in ELTE 260B or concurrently.
ELTE260D	Timers and Counters - SLC500	0.25	In this module students program PLC timers and counters as implemented in the Allen-Bradley SLC 500. (F,Sp,Su). Prerequisite: Minimum 4.0 in ELTE 260C or concurrently.
ELTE260E	Troubleshooting - SLC500	0.25	This module provides an introduction to troubleshooting a PLC and devices attached to input and output cards. The Allen Bradley SLC 500 is used. (F,Sp,Su). Prerequisite: Minimum 4.0 in ELTE 260D or concurrently.
ELTE261	Programmable Controllers II	6	This course covers programming and connections for Allen-Bradley PLC-5 controllers. Focus on math, subroutine, file, block transfer, sequencers, logic and bit manipulation instructions. Students will learn logic for machine control, programming and utilizing intelligent cards, analog input/output and system documentation. (Sp). Prerequisite: Minimum 2.0 in ELTE 260. Course Note: Students are required to provide a 2 gigabyte memory stick (jump drive) with USB port interface.
ELTE261A	A-B PLC-5 Adv Relay Equiv Inst	0.75	This module covers programming for Allen-Bradley PLC-5 controllers, including the creation and editing of programs, using the Data File and using advanced relay equivalent instructions, such as the retentive timer instruction, latch instruction, one shot instruction and master reset instruction. (F,Sp,Su). Prerequisite: Minimum 2.0 in ELTE 260.
ELTE261B	A-B PLC-5 Prog Conv & Docum	0.75	This module covers conversion of relay logic programs to Allen-Bradley PLC-5 programs, including documenting the program. It also covers uploading/downloading programs to the PLC-5 controller. (F,Sp,Su). Prerequisite: Minimum 4.0 in ELTE 261A.
ELTE261C	A-B PLC-5 Math and Logic	0.75	This module covers programming and use of math, data compare, and bit logic instructions on the A-B PLC-5 controller. It also covers the connection of BCD devices to the I/O of the PLC-5 controller. (F,Sp,Su). Prerequisite: Minimum 4.0 in ELTE 261B.
ELTE261D	A-B PLC-5 File Functions	1.25	This module covers programming and use of file instructions on the A-B PLC-5 controller. (F,Sp,Su). Prerequisite: Minimum 4.0 in ELTE 261C.
ELTE261E	A-B PLC-5 Block Trans & Intell	1.75	This module covers programming and use of block transfer instructions on the A-B PLC-5 controller. It also covers the operation and connection of devices to intelligent I/O cards. (F,Sp,Su). Prerequisite: Minimum 4.0 in ELTE 261D.
ELTE261F	A-B PLC-5 Prog Flow Instruc	0.75	This module covers programming and use of program flow instructions on the A-B PLC-5 controller. (F,Sp,Su). Prerequisite: Minimum 4.0 in ELTE 261E.

COURSE	TITLE	CREDIT HOURS	TEXT
ELTE270	Lineworker Orientation	1	The purpose of this course is to give prospective lineman apprenticeship candidates a good demonstration of the work they will be required to do as an apprentice and journeyman lineworker. Students will be given an introduction to the physical aspects and mental discipline required to perform the duties of a lineworker with demonstrations and physical tests. (Su). Prerequisite: Department Approval.
ELTE272	Electric Basic Line Climbing	4	This course is designed to provide students with the basic knowledge and pole climbing skills necessary to progress through the Electric Line Apprentice Program. (Su). Prerequisite: Department Approval.
ELTE274	Ground/Utility Worker	5	This course is designed to provide students with the basic Ground Worker/Utility Worker knowledge and skills necessary to progress through the Electric Line Apprentice Program. (Su). Prerequisite: Minimum 3.5 in ELTE 272.
ELTE276	Energized Secondary Worker	5	This course addresses the knowledge and skills necessary to progress through the Electric Line Apprentice Program with a focus on the installation and maintenance of secondary lines of 120/240 Volts. Safe work practices on energized conductors and aerial lifts, digger derricks and associated equipment are developed and required. (Su). Prerequisite: Minimum 3.5 in ELTE 274.
ELTE290	Electrical Internship	2 to 4	This course provides Electrical Technology students with practical work experience in industry. Students work for an employer in a supervised environment which provides an opportunity to apply knowledge and skills learned in the classroom and lab to an actual job situation. (F, Sp, Su). Prerequisite: Department Approval.
ELTE291	Electrical Project Lab	1 to 4	A guided study of topics of interest in electrical technology. The student will prepare a summary report of activities and demonstrate results of laboratory experiences. (F,Sp,Su). Prerequisite: Department Approval.
EMTA100	Emergency Medical Responder	4	This course will provide the student with the knowledge and skills necessary to manage ill or injured victims at the scene of an emergency until the arrival of ambulance personnel. Successful completion enables the student to apply for state licensure as an emergency first responder. (F,Sp,Su). Prerequisite: None.
EMTA101	Basic EMT I	4	First in a sequence of five courses to prepare the student as a Basic EMT. Emphasis is placed on didactic material including airway management, patient assessment, CPR soft tissue injuries, head, chest, and abdominal injuries, and proper use of equipment in the delivery of basic emergency care. (F,Sp,Su). Prerequisite: Must be 18 years of age and Reading Level 5 and Writing Level 6 and Department Approval. Co-Requisite Course(s): EMTA 102.
EMTA102	Basic EMT II	2	Second in a sequence of five courses to prepare the student as a Basic EMT. Emphasis is placed on practical skills including patient assessment, bandaging, splinting, backboarding, oxygen delivery equipment, CPR, and airway management in the delivery of basic emergency care. (F,Sp,Su). Prerequisite: None. Co-requisite Course(s): EMTA 101.
EMTA103	Basic EMT III	4	The third in a sequence of five courses to prepare the student as a Basic EMT. Emphasis is placed on didactic material including the recognition and management of environmental and medical emergencies; verbal, written and radio communications; triage, emergency childbirth; and pediatric emergencies. (F,Sp,Su). Prerequisite: Minimum 3.0 in (EMTA 101 and EMTA 102). Co-Requisite Course(s): EMTA 104 and EMTA 112.
EMTA104	Basic EMT IV	2	The fourth course in a sequence of five to prepare the student as a Basic EMT. Emphasis is placed on the overall delivery of basic emergency care through simulated emergencies. (F,Sp,Su). Prerequisite: Minimum 3.0 in (EMTA 101 and EMTA 102). Co-Requisite Course(s): EMTA 103 and EMTA 112.
EMTA105	Ambulance Driving	1	This course provides the EMT with practical knowledge and experience to safely operate an ambulance. Course topics include safety strategies, operational laws, defensive driving techniques, and specialized driving maneuvers. (F,Sp). Prerequisite: Minimum 3.0 in (EMTA 100 or EMTA 101 or concurrently) and proof of valid driver's license and Department Approval.
EMTA112	Basic EMT Clinical	3	The fifth course in a sequence of five to prepare the student as a basic EMT. Includes required OSHA standards, hospital clinicals, ambulance clinicals, and a community service component. Classroom time enhances assessment, history taking skills, and report writing. (F,Sp,Su). Prerequisite: Minimum 3.0 in (EMTA 101 and EMTA 102). Co-Requisite Course(s): EMTA 103 and EMTA 104.

COURSE	TITLE	CREDIT HOURS	TEXT
EMTA114	Rescue/Extrication/Danger Situ	3	A course to provide EMS or rescue personnel with skills in light and heavy vehicle extrication, industrial rescue techniques, extrication from farm machinery, and other specialized rescue techniques. Emphasis is placed on patient and rescuer safety. (F,Sp). Prerequisite: None.
EMTA222	EMS Instructor-Coordinator	10	A course for EMS personnel interested in becoming an EMS instructor coordinator. Includes teaching and testing methods, lesson plan development, writing performance objectives, course administration, State of Michigan application process for course approval, and meeting other State-mandated requirements. Student teaching is required. (Su). Prerequisite: 3 years field experience and Department Approval.
ENGL122	Writ About Literature & Ideas	4	An alternative to WRIT122, ENGL122 introduces the students to various literary forms and develops analytical skills in reading, writing, and research techniques. Writing assignments begin with short essays and conclude with an extensive literary research paper. (F,Sp,Su). Prerequisite: Minimum 2.0 in WRIT 121 or WRIT 131 or (Reading Level 5 and Writing Level 8). Course Note: Students must attend the first week of class to avoid being dropped.
ENGL132	Honors Writ-Literature & Ideas	4	An alternative to WRIT122. ENGL132 is an introduction to various literary forms, in addition to the development of analytical reading and writing skills and research techniques leading to a literary research paper. (Same as ENGL122 but taught on an advanced level.) (Sp). Prerequisite: Minimum 3.5 in (WRIT 121 or WRIT 131).
ENGL201	Introduction to Poetry	4	An introduction to the content, form, style, and technique of poetry; its structural types: metrical, blank, and free verse; its thematic types: lyric, narrative, and dramatic; and its effects or purposes. The course emphasizes poetry written in English but includes English translations of representative poetry from other languages and cultures. (Sp,Su). Prerequisite: Reading Level 5 and Writing Level 6. Recommended: (WRIT 121 or WRIT 131) and ENGL 122.
ENGL202	World Drama	4	Introduces drama as a unique genre with its own literary techniques and conventions within a global context. Students will read and interpret representative plays from the ancients to the 21st century, including works from Western and non-Western cultures. (F). Prerequisite: Reading Level 5 and Writing Level 6. Recommended: (WRIT 121 or WRIT 131) and ENGL 122.
ENGL203	Introduction to Prose	4	This course is a study of prose genres: the essay, the short story, and the novel. Students will read and discuss a broad selection of works, representing many literary styles, forms, and traditions. The novel and the short story will be examined in historical, social, political, and literary contexts. (F). Prerequisite: Reading Level 5 and Writing Level 6. Recommended: (WRIT 121 or WRIT 131) and ENGL 122.
ENGL205	The Power of Autobiography	3	Autobiographical writing, which includes letters, journals, and diaries, is the focus of this special seminar on prose literature. Works to be read chronicle the literary, artistic, historical, social, and political life transformations experienced by notable twentieth century figures. Course emphasis is on the power of the personal narrative as literature. (Sp). Prerequisite: Reading Level 5 and Writing Level 6. Recommended: (WRIT 121 or WRIT 131) and ENGL 122.
ENGL208	Children's Literature	4	This course offers a survey of children's literature, from fairy tales to young adult novels. Students will be introduced to a variety of literary genres in classic and contemporary works. Students will experience the literature through writing, discussion, oral or dramatic presentations, and other means suitable to classroom practice. (F,Sp,Su). Prerequisite: Reading Level 5 and Writing Level 6. Recommended: (WRIT 121 or WRIT 131) and ENGL 122. Course Note: Students must attend the first week of class to avoid being dropped.
ENGL211	World Literature I	4	A selective survey of the literatures of major world cultures reflecting the diversity of the continents of Africa, the Americas, Asia, and Europe to approximately the 17th century. Explores the historical, ethnic, aesthetic, political, economic, and thematic elements of their respective cultures through narrative prose fiction, poetry, and drama. (F). Prerequisite: Reading Level 5 and Writing Level 6. Recommended: (WRIT 121 or WRIT 131) and ENGL 122. Course Note: Students must attend the first week of class to avoid being dropped.
ENGL212	World Literature II	4	A survey of the literatures of major cultures reflecting the diversity of the continents of Africa, the Americas, Asia, and Europe from approximately the 17th century through the present. Explores the historical, ethnic, aesthetic, political, economic, and thematic elements of their cultures through narrative prose fiction, poetry, and drama. (Sp). Prerequisite: Reading Level 5 and Writing Level 6. Recommended: (WRIT 121 or WRIT 131) and ENGL 122.
ENGL220	Science Fiction	4	ENGL220 is an introductory course which explores significant issues in science fiction. Novels and/or stories will be the main focus, although works from other media also may be studied. The course's emphasis transcends entertainment to include understanding, interpretation, and analysis as well. (F). Prerequisite: Reading Level 5 and Writing Level 6. Recommended: (WRIT 121 or WRIT 131) and ENGL 122.

COURSE	TITLE	CREDIT HOURS	TEXT
ENGL240	The Film as Art	4	This course will introduce film as an art form capable of making perceptive comments on our civilization. Thematic analysis of 12 to 15 motion pictures of recognized merit will emphasize the film maker's visual and aural techniques as well as conventions more commonly associated with literature. (Sp,Su). Prerequisite: Reading Level 5 and Writing Level 6. Recommended: (WRIT 121 or WRIT 131) and ENGL 122.
ENGL245	Popular Culture and Mass Media	4	A study of the popular culture distributed by mass media (newspapers, radio, film, television, magazines, and music videos) and how the media and popular culture reflect and shape our cultural beliefs. Extensive use of multimedia. (F). Prerequisite: Reading Level 5 and Writing Level 6. Recommended: (WRIT 121 or WRIT 131) and ENGL 122.
ENGL255	American Lit to 1865	4	Provides a perspective on the evolution of traditional American literature beginning with the writings of the first European explorers and Native American oral tradition. Features selected essays, autobiographical writings, poems, fiction, and drama from the mid-15th century to 1865, including the work of women and ethnic minorities, which have contributed to American thought. (F). Prerequisite: Reading Level 5 and Writing Level 6. Recommended: (WRIT 121 or WRIT 131) and ENGL 122.
ENGL256	American Lit 1865 to Present	4	Provides a perspective on the further development of traditional American literature from 1865 (the Realism period) to contemporary literature. Features selected essays, autobiographical writings, poems, fiction, and drama from the end of the Civil War to the literature of the late 12th century, including the work of women and ethnic minorities, which have profoundly shaped American literature. (Sp). Prerequisite: Reading Level 5 and Writing Level 6. Recommended: (WRIT 121 or WRIT 131) and ENGL 122.
ENGL260	African-American Literature	4	This course introduces the African-American literary tradition as seen in the literature of the Americas, including the Caribbean. Selections explore the black experience in autobiography, essay, fiction, poetry, and drama. Themes of slavery, colonialism, and the Black Diaspora are discussed. Reading selections include the Harlem Renaissance and contemporary texts. (F). Prerequisite: Reading Level 5 and Writing Level 6. Recommended: (WRIT 121 or WRIT 131) and ENGL 122.
ENGL266	British Lit to 1800	4	British Literature I surveys the poetry, prose, and drama of the major British writers from Chaucer (14th Century) to the Satirists (18th Century). The works are selected to reflect the attitudes and values of British culture and the perception of the world from a British point of view. (F). Prerequisite: Reading Level 5 and Writing Level 6. Recommended: (WRIT 121 or WRIT 131) and ENGL 122.
ENGL267	British Lit 1800 to Present	4	British Literature II surveys the poetry, prose, and drama of the major British writers from the Romantics (19th Century) to late 20th Century. The works are selected to reflect the attitudes and values of British culture and the perception of the world from a British point of view. (Sp). Prerequisite: Reading Level 5 and Writing Level 6. Recommended: (WRIT 121 or WRIT 131) and ENGL 122.
ENGL270	Literature by Women	4	A study of selected works by English and North American women writers. Designed to increase understanding of the themes, images, issues, and modes of expression of women writers. (Sp).Prerequisite: Reading Level 5 and Writing Level 6. Recommended: (WRIT 121 or WRIT 131) and ENGL 122.
ENGL290	Shakespeare	4	Students will read, discuss and write about selected comedies, histories, tragedies and romances written by Shakespeare. To better understand how Shakespeare's work continues to influence literature and the arts, the class may also screen film versions of modern re-tellings of Shakespearean plots. (F,Sp). Prerequisite: Reading Level 5 and Writing Level 6. Recommended: (WRIT 121 or WRIT 131) and ENGL 122.
ENGL295	Independent Study in English	1 to 4	An opportunity for self-directed learners to explore topics related to, but not taught in the curriculum. Students spend at least two hours per week for each credit. A detailed proposal must be submitted by the student for approval by the Department and supervising instructor prior to registration. (F,Sp,Su). Prerequisite: Department Approval.
ENVR121	Environmental Rules and Regs	3	Overview of federal and state environmental regulations and agency rules that regulate discharges to air, water, and land. Laws are examined with respect to the reason the regulation is needed, what the law does, and how it does it. The course is designed for students pursuing careers as environmental technicians. (Sp). Prerequisite: Reading Level 5 and Writing Level 6.
ENVR122	Enviro Sampl & Instrumentation	4	An introduction to sampling and monitoring procedures and instrumentation to accomplish a task. Students will learn to take samples from ground water, surface water, air, and soil. This course is designed for students pursuing careers in biological science, but emphasizes the skills used by environmental technicians. (F). Prerequisite: Reading Level 5 and Writing Level 6 and Math Level 5.
ENVR131	Industrial Process Safety	3	Introduction to general manufacturing processes with emphasis on waste reduction and pollution prevention strategies. Case studies of basic processes, materials flow, worker health and safety, waste reduction, and pollution prevention will be examined. Fundamentals of toxicology, epidemiology, and environmental health will be used in understanding workplace safety and health issues. (Sp). Prerequisite: Reading Level 5 and Writing Level 6.

COURSE	TITLE	CREDIT HOURS	TEXT
ESOL050	Basic Reading & Speaking Skill	6	Designed for high-beginning level ESOL students with basic vocabulary, reading, speaking and listening skills. Emphasis on building these and related skills through multicultural mixed-genre readings and a variety of controlled communication activities leading to more independent learning. Interactive software use required in computer lab work. (F,Sp). Prerequisite: Placement Test. Recommended: ESOL 055 concurrently.
ESOL055	Grammar & Sentence Writg Skill	6	Designed for high-beginning level ESOL students who need to learn the fundamentals of the English grammar system using Standard Written English to write clear and complete sentences. Course related computer technology will be introduced. Some lab hours are required. Class readings will help students improve knowledge of American history and culture. (F,Sp). Prerequisite: Placement Test. Recommended: ESOL 050 concurrently.
ESOL070	Intermediate Reading and Speak	6	Designed for intermediate level ESOL students who will develop higher level reading, speaking, listening, and other related skills. Focus on theme-based, guided communication activities, oral reports, and increased responsibility for own independent learning. Continued emphasis on vocabulary building. Interactive software use and word-processing required in computer lab work. (F,Sp). Prerequisite: Minimum 2.5 in ESOL 050 or Placement Test. Recommended: ESOL 075 concurrently.
ESOL075	Grammar and Paragraph Writing	6	Designed for intermediate level ESOL students. Emphasis is on form and usage of the verb tense system in Standard Written English and on fundamentals of paragraph writing. A process approach to writing is used. Typing skills will be required by end of semester. Some lab hours are required. Class reading emphasizes American history and culture. (F,Sp). Prerequisite: Minimum 2.5 in ESOL 055 or Placement Test. Recommended: ESOL 070 concurrently.
ESOL090	High Inter. Reading and Speak	6	Designed for high-intermediate ESOL students who are advanced readers and independent learners. Interaction with complex theme-based readings, and participation in higher level communication activities, including oral presentations and sustained, tense-appropriate narration. Emphasis on vocabulary expansion. Word processing, email, and use of interactive software required in computer lab work. (F,Sp). Prerequisite: Minimum 2.5 in ESOL 070 or Placement Test. Recommended: ESOL 095 concurrently.
ESOL095	Grammar and Essay Writing Skill	6	Designed for high-intermediate level ESOL students. Emphasis is on form and usage of perfect verb tenses and complex sentence structures in Standard Written English, and on fundamentals of essay development. Typing skills and some lab hours are required. A process approach to writing is used. Class readings emphasize American history and culture. (F,Sp). Prerequisite: Minimum 2.5 in ESOL 075 or Placement Test. Recommended: ESOL 090 concurrently.
ESOL100	Computer Literacy ESOL Student	1	For ESOL students with little or no previous experience using computers. Students will learn vocabulary for the parts of the computer and for performing basic functions. Students will learn to access LCC web-based resources and become familiar with word-processing and keyboarding skills. (F,Sp,Su). Prerequisite: None. Recommended: ESOL 075 or ESOL 095 or ESOL 115 concurrently.
ESOL103	Focus on Pronunciation	4	This course is designed for advanced level non-native speakers of English who wish to improve pronunciation. Students will have an individual speech profile. Emphasis is on improving understanding of American English, and building awareness of and practicing American English stress, intonation, and rhythm patterns and clear pronunciation of individual sounds. (F,Sp,Su). Prerequisite: Minimum 2.5 in ESOL 090 or ESOL 095 or Placement Test.
ESOL105	Applied Grammar for Writing	4	For advanced non-native speakers of English who need to improve the grammar of their writing. Students keep a language learning journal to identify their own patterns of errors. Students learn strategies for acquiring correct grammatical structures and learn to edit their own writing. Some internet use required to complete assignments. (F,Sp,Su). Prerequisite: Minimum 2.5 in ESOL 095 or (minimum 2.5 in ESOL 115 or concurrently) or Writing Level 4. Recommended: WRIT 117 or WRIT 121 concurrently and Word processing skills desirable.
ESOL110	Bridge to Academic Reading	4	Bridge to Academic Reading is designed for low-advanced level non-native speakers of English. Emphasis is on developing reading strategies and vocabulary skills to improve overall reading comprehension of college level texts. A basic skill reading level 4 is granted upon successful completion of this course. (F,Sp,Su). Prerequisite: Minimum 2.5 in ESOL 090 or Placement Test.
ESOL113	Academic Listening/Notetaking	4	This course is for advanced ESOL students who want to enter academic or career programs. Students will increase their academic and general vocabulary, learn to take effective notes and use these notes to answer essay questions, improve overall listening comprehension, and participate in class discussions. (F,Sp). Prerequisite: Minimum 2.5 in ESOL 090 or ESOL 095 or Placement Test.

COURSE	TITLE	CREDIT HOURS	TEXT
ESOL115	Developing College Writ Skills	4	Designed to prepare advanced level non-native speakers of English for success in academic writing. Students use a process approach to writing to produce well-developed essays using a variety of sentence types and accurate grammatical structures. Basic skills writing level 4 is granted upon successful completion of this course. (F,Sp). Prerequisite: Minimum 2.5 in ESOL 090 and ESOL 095 or Placement Test.
ESOL119	Academic Communication Skills	4	Designed for pre-college level ESOL students, this course focuses on listening, effective note taking, academic vocabulary and speaking functions common in academic settings while using computer technology as a learning medium. Participation, word processing, email, and use of interactive software required. (F,Sp,Su). Prerequisite: (Minimum 2.5 in ESOL 095 or Writing Level 4) and (Minimum 3.0 in ESOL 110 or Reading Level 4). Recommended: Computer literacy skills, knowledge of the learning management system, strong ability to work independently.
ESOL120	Academic Reading Skills	4	Academic Reading Skills is designed to prepare advanced level non-native speakers of English for academic success. Emphasis is on developing reading strategies and skills, including critical reading and vocabulary building for efficient processing of general academic texts. Basic skills reading level 5 granted upon successful completion of this course. (F,Sp,Su). Prerequisite: Minimum 3.0 in ESOL 110 or Reading Level 4.
FASH100	Apparel Sketching	3	Techniques of apparel sketching and producing illustrations using various media. Topics will include design and inspiration, figure croquis, garments, and pattern flats. Begin a design portfolio. Sustainable methods and systems of ecology, economy and equity applied. (F, Sp). Prerequisite: Reading Level 3 and Writing Level 2. Recommended: FASH 120 or concurrently.
FASH101	Special Topics/App. & Textiles	.25 to 8	Special topics and current issues for professional development. Sustainable methods and systems of ecology, economy and equity discussed or applied. (F,Sp,Su). Prerequisite: Determined by Section.
FASH110	Computer Aided Design & Color	3	Foundation of design and color theory with computer applications and various media. Topics include two- and three-dimensional design aesthetics, color theories and systems, creativity and problem solving. Concepts of sustainable methods and systems of ecology, economy and equity applied. (F,Sp). Prerequisite: Minimum 2.0 in FASH 100 or concurrently and Reading Level 3 and Writing Level 4. Recommended: FASH 120 and (CITF 108 or CITF 110 or METD 105 or concurrently or equivalent).
FASH120	Intro to the Apparel Industry	3	Introduction to the apparel and textiles industry including manufacturing, global marketing, management, merchandising, retailing and eCommerce, including sustainable methods and systems of ecology, economy and equity. (F,Sp). Prerequisite: Reading Level 3 and Writing Level 4.
FASH125	Apparel Construction I	4	Introduction to apparel construction and applications of industrial stitching and finishing practices. Assemble and fit beginning garments in woven fabrics. Industry Samples will be created for student portfolio. Sustainable methods and systems of ecology, economy and equity applied. (F). Prerequisite: Department Approval.
FASH130	Apparel Analysis/Specification	3	Apparel and product development, specification sheets and technical design for manufacturing in a global market. Includes industry standards, size measurement calculations, cost and quality using computer applications. Sustainable methods and systems of ecology, economy and equity applied. (F). Prerequisite: Reading Level 3 and Writing Level 2. Recommended: FASH 110.
FASH144	Visual Merchandising & Display	3	Apply elements and principles of design in visual merchandising and display. Design, layout and display fixtures and lighting systems for retail environments, apply color theory using computer applications. Sustainable methods and systems of ecology, economy and equity applied. (Sp). Prerequisite: Minimum 2.0 in FASH 120. Recommended: FASH 110 or concurrently or equivalent.
FASH150	Apparel and Textile Design	3	Product development for textile design using computer applications. Knits introduced. Sustainable methods and systems of ecology, economy and equity applied. (Sp). Prerequisite: Minimum 2.0 in (FASH 110 and FASH 120). Recommended: FASH 185 or concurrently.
FASH185	Textiles Analysis	3	Examine and analyze properties and identification for textile fibers, yarns and fabric construction. Includes finishes, regulations, performance, processes, applications and care in apparel and industrial design. Sustainable methods and systems of ecology, economy and equity applied. (F,Sp). Prerequisite: Reading Level 5 and Writing Level 6.

COURSE	TITLE	CREDIT HOURS	TEXT
FASH225	Apparel Construction II	4	Advanced apparel construction using industrial stitching and finishing practices, including assembling and finishing of complex garments in various fabrics. Production operations used to assemble, tailor and fit difficult garments. Industry Samples will be created for student portfolio. Sustainable methods and systems of ecology, economy and equity applied. (Sp). Prerequisite: Minimum 2.0 in FASH 125 . Recommended: FASH 130.
FASH230	Costume History	3	Social, psychological, political, technological and cultural factors that have influenced global apparel worn by individuals and groups of men, women and children from ancient times to the present. Sustainable methods and systems of ecology, economy and equity discussed. (F). Prerequisite: Reading Level 5 and Writing Level 6.
FASH250	Adv Comp Aided Textile/App Dsn	3	Advanced design for the development of apparel and textiles. Expand design skills using industry computer applications. Sustainable methods and systems of ecology, economy and equity applied. (F). Prerequisite: Minimum 2.0 in FASH 150.
FASH260	Apparel Merch Planning/Control	3	Merchandising math for apparel retailing. Formulas based upon buying industry practices, procedures and calculations using computer applications. Sustainable methods and systems of ecology, economy and equity applied. (Sp). Prerequisite: Minimum 2.0 in FASH 120. Recommended: Minimum 2.0 in (MATH 117 or Math Level 5) and CITA 126.
FASH263	Apparel/Textiles Internship	2 to 4	Directed worksite experience in the apparel industry. Sustainable methods and systems of ecology, economy and equity applied. Maintain a journal. Submit regularly scheduled progress reports, and discuss with the supervising faculty member. (Su). Prerequisite: Department Approval. Recommended: 2.0 GPA and 20 credits completed in FASH or INTR. Course Note: It is recommended that students begin their worksite search one semester before enrolling for Internship by completing a job application at the LCC Career and Employment Services Office, Room GB 218. Prior to registration, the student will also need to contact the Program Advisor, Christine Conner, at 517-483-5338, for both worksite placement and Department Approval.
FASH270	Apparel/Textiles Portfolio	2	Capstone course to develop and preserve visual works by organizing, photographing or scanning, mounting, and digitally enhancing. Course outcome is a professional portfolio formatted physically and digitally to obtain immediate employment or transfer to a senior college. Sustainable methods and systems of ecology, economy and equity applied. (Sp). Prerequisite: Minimum 2.0 in (FASH 100 and FASH 110). Recommended: 20 credits completed in FASH or equivalent.
FASH275	Directed Study Apparel/Textile	1 to 4	Advanced opportunity to explore topics not addressed in the curriculum, including special projects, field study and travel, research, and other directed study topics. Sustainable methods and systems of ecology, economy and equity applied. (Su). Prerequisite: Department Approval. Recommended: 2.0 GPA and 20 credits completed in FASH and/or INTR.
FIRE100	Principles Emergency Services	4	This course provides an overview to fire protection; career opportunities in fire protection and related fields; philosophy and history of fire protection/service; organization and function of public and private fire protection services; fire departments as part of local government; laws and regulations affecting the fire service; and fire service nomenclature. (F,Sp). Prerequisite: Reading Level 5 and Writing Level 4.
FIRE101	MI F.F.T.C. Basic Fire Level I	10	Level I is basic training required for all firefighters in the State of Michigan. Training is certified by the Michigan Fire Fighters Training Council and includes the basics of fire suppression, apparatus operation, life safety, and physical fitness. (F,Sp). Prerequisite: Department Approval. Co-Requisite Course(s): FIRE 102 and PFFT 119.
FIRE102	MI F.F.T.C. Basic Fire Lev II	6	Level II is basic training required for all career firefighters in the State of Michigan. Training is certified by the Michigan Fire Fighter's Training Council and includes advanced fire suppression, aerial operation, life safety, and physical fitness. (F,Sp). Prerequisite: Department Approval. Co-Requisite Course(s): FIRE 101 and PFFT 119.
FIRE104	Fire Behavior & Combustion	3	This course explores the theories and fundamentals of how and why fires start and spread. (F,Sp). Prerequisite: Minimum 2.0 in (FIRE 100 or concurrently) or (FIRE 101 and FIRE 102).
FIRE105	Fire/Hydraulics/Water Supply	4	This course provides a foundation of theoretical knowledge in order to understand the principles of the use of water in fire protection and to apply hydraulic principles to analyze and to solve water supply problems. (F). Prerequisite: (Minimum 2.0 in FIRE 100 or (FIRE 101 and FIRE 102)) and (minimum 2.0 in MATH 107 or Math Level 5) and Department Approval. Course Note: Department approval required. Contact the Fire Technology Program advisor at 517-483-1394.

COURSE	TITLE	CREDIT HOURS	TEXT
FIRE110	Fire Prevention	3	This course provides fundamental information regarding the history and philosophy of fire prevention, organization and operation of a fire prevention bureau, use of fire codes, identification and correction of fire hazards, and the relationships of fire prevention with built-in fire protection systems, fire investigation, and fire and life-safety education. (F). Prerequisite: Minimum 2.0 in (FIRE 100 or concurrently) or (FIRE 101 and FIRE 102) and Department Approval. Course Note: Department approval required. Contact the Fire Technology Program advisor at 517-483-1394.
FIRE112	Occup Health & Safety/Fire Svc	4	This course introduces the basic concepts of occupational health and safety as it relates to emergency service organizations. Topics include risk evaluation and control procedures for fire stations, training sites, emergency vehicles, and emergency situations involving fire, EMS, hazardous materials, and technical rescue. (F,Sp). Prerequisite: Minimum 2.0 in (FIRE 104 or concurrently) and Department Approval. Course Note: Department approval required. Contact the Fire Technology Program advisor at 517-483-1394.
FIRE115	Bldg Construction/Fire Protect	4	This course provides the components of building construction that relate to fire and life safety. The focus of this course is on firefighter safety. The elements of construction and design of structures are shown to be key factors when inspecting buildings, preplanning fire operations, and operating at emergencies. (F). Prerequisite: Minimum 2.0 in (FIRE 100 or concurrently) or (FIRE 101 and FIRE 102) and Department Approval. Course Note: Department approval required. Contact the Fire Technology Program at 517-483-9608.
FIRE122	Hazardous Materials Chem I	4	This course covers basic fire chemistry relating to the categories of hazardous materials including problems with recognition, reactivity, and health encountered by firefighters. (F,Sp). Prerequisite: Minimum 2.0 in (FIRE 104 or concurrently) or (FIRE 101 and FIRE 102) and Department Approval. Course Note: Contact the Fire Technology Program advisor at 517-483-1394 for department approval.
FIRE125	Fire Protection Systems	4	This course provides information relating to the features of design and operation of fire detection and alarm systems, heat and smoke control systems, special protection and sprinkler systems, water supply for fire protection and portable fire extinguishers. (Sp). Prerequisite: Minimum 2.0 in FIRE 105 and Department Approval. Course Note: Department approval required. Contact the Fire Technology Program advisor at 517-483-1394.
FIRE150	Strategy and Tactics	4	This course provides an in-depth analysis of the principles of fire control through utilization of personnel, equipment, and extinguishing agents on the fire ground. This course meets the Michigan Office of Fire Fighter Training prerequisites for Fire Officer I and II. (Sp). Prerequisite: (Minimum 2.0 in FIRE 101 and FIRE 102) or MI F.F.T.C. Fire Fighter I & II Certification and Department Approval. Course Note: Department Approval required. Contact the Fire Technology Program at 517-483-9608.
FIRE210	Fire Investigation I	4	This course is intended to provide the student with the fundamentals and technical knowledge needed for proper fire scene interpretations, including recognizing and conducting origin and cause, preservation of evidence and documentation, scene security, motives of the fire setter, and types of fire causes. (Sp). Prerequisite: Minimum 2.0 in (FIRE 104 or concurrently) or (FIRE 101 and FIRE 102) and Department Approval. Course Note: Contact the Fire Technology Program advisor at 517-483-1394 for department approval.
FIRE215	Fire Investigation II	3	This course is intended to provide the student with advanced technical knowledge of rule of law, fire scene analysis, fire behavior, evidence collection and preservation, scene documentation, case preparation and testifying. (F). Prerequisite: Minimum 2.0 in FIRE 210 and Department Approval. Course Note: Contact the Fire Technology Program advisor at 517-483-1394 for department approval.
FIRE220	Hazardous Materials/Fire Svc	4	This course explores the concepts and methods of detection, control, and mitigation of hazardous materials incidents. Contains specific elements of NFPA 471, 472 and OSHA CFR 1910.120. This course is designed to train Haz-mat technicians. (Sp). Prerequisite: Minimum 2.0 in FIRE 104 or (FIRE 101 and FIRE 102) and Haz-Mat Operational Level Training and Department Approval. Course Note: Contact the Fire Technology Program at 517-483-9608 for department approval.
FIRE245	Fire Officer I & II	4	This course introduces the firefighter to the duties assigned to company level officers. Topics addressed include budgeting, planning, public relations, personnel management, communications, legal responsibilities, and safety at the company level. This course complies with the Michigan Office of Fire Fighter Training requirements for Fire Officer I and II. (F). Prerequisite: Department Approval. Course Note: Department approval required. Contact the Fire Technology Program at 517-483-9608.

COURSE	TITLE	CREDIT HOURS	TEXT
FIRE250	Fire Administration I	4	This course introduces the student to the organization and management of a fire department and the relationship of government agencies to the fire service. Emphasis is placed on fire service leadership from the perspective of the company officer. (F,Sp). Prerequisite: Minimum 2.0 in FIRE 150 and Department Approval. Course Note: Department approval required. Contact the Fire Technology Program at 517-483-9608.
FIRE255	Fire Officer III & IV	4	This course provides the basic tools for analyzing and evaluating budgets, programs, policies, personnel and management systems within the fire service organization. Data interpretation and planning are major elements addressed in this course. Enhancement of fire service leadership decision-making capabilities is the primary focus of this course. (Sp). Prerequisite: Minimum 2.0 in (FIRE 245 and FIRE 250) or concurrently and Department Approval. Course Note: Contact the Fire Technology Program advisor at 517-483-1394 for department approval.
FIRE260	Legal Aspects/Fire Service	4	This course introduces the federal, state, and local laws that regulate emergency services, national standards which influence emergency services, standard of care, tort and liability. Relevant court cases are also reviewed. (F). Prerequisite: Minimum 2.0 in FIRE 104 or (FIRE 101 and FIRE 102) and Department Approval. Course Note: Contact the Fire Technology Program advisor at 517-483-1394 for department approval.
FIRE270	Fire Service Career Developmnt	3	This course prepares the student for entry into the fire service workplace. Student will learn new processes of organizational operations and professional development skills. Students will complete 108 hrs of internship with a previously screened agency. The required Associate Degree assessment will be administered in this course. (F, Sp, Su). Prerequisite: Department Approval. Recommended: Completion of all other required courses in curriculum. Course Note: Department approval required. Contact the Fire Technology Program advisor at 517-483-1394.
FIRE280	Fire Directed Indep Study	.5 to 3	This course includes special research, projects, or directed study in fire science technology. Firefighting students may enroll to update or enhance knowledge, skills, and competencies. Advanced students may explore topics related to, but not included in the curriculum. A learning contract specifying objectives, activities, and outcomes is required. (F,Sp,Su). Prerequisite: Department Approval. Course Note: Department approval required. Contact the Fire Technology Program advisor at 517-483-1394.
FIRE285	Fire Science Special Topics	.25 to 8	This course offers students the opportunity to learn new fire science career skills and knowledge. Specific up-to-date content will vary with each topic presented and will be related to fire science careers. (F, Sp, Su). Prerequisite: Determined by Section. Course Note: Department approval required. Contact the Fire Technology Program advisor at 517-483-1394.
FIRE295	Fire Science Special Topics	.25 to 8	This course offers students the opportunity to learn new fire science career skills and knowledge. Specific up-to-date content will vary with each topic presented and will be related to fire science careers. This course will be graded on a Pass/Fail basis. (F,Sp,Su). Prerequisite: Determined by Section.
FLNG295	Ind Study in Foreign Language	1 to 4	An opportunity for self-directed learners to explore topics related to, but not taught in the curriculum. Students spend at least two hours per week for each credit. A detailed proposal must be submitted by the student for approval by the Department and supervising instructor prior to registration. (F,Sp,Su). Prerequisite: Department Approval.
FREN115	Conversational French I	3	Students learn how to communicate orally in everyday life situations and in travel abroad. Emphasis is on the development of ability to communicate in French. French culture is explored. (F,Sp,Su). Prerequisite: None.
FREN116	Conversational French II	3	Continuation of FREN115. Designed for advanced beginners who wish to improve their speaking ability in the context of daily living. Emphasis is placed on contemporary vocabulary, essentials of grammar, and pronunciation through class discussions conducted in French. Students will continue to explore different aspects of life and culture in the francophone world. (F,Sp). Prerequisite: None. Recommended: FREN 115 or equivalent.
FREN121	Elementary French I	4	First course of a two-semester sequence in elementary French. Students are introduced to basic structures of French, enabling them to develop listening, speaking, reading, and writing skills. Emphasis is on contemporary vocabulary, essentials of grammar, and pronunciation. (F,Sp,Su). Prerequisite: Reading Level 5.

COURSE	TITLE	CREDIT HOURS	TEXT
FREN122	Elementary French II	4	Second course of a two-semester sequence in Elementary French. Introduction to more complex structures and patterns, and more active use of spoken and written French. (Sp). Prerequisite: Minimum 1.5 in FREN 121 or equivalent.
FREN201	Intermediate French I	4	First course of a two-semester sequence. Course provides grammar review, vocabulary building, listening comprehension, composition writing, group discussions, and readings of literary and cultural texts, short stories, and news articles for a better understanding of the francophone world. (F). Prerequisite: Minimum 1.5 in FREN 122 or equivalent.
FREN202	Intermediate French II	4	Second course of a two-semester sequence. Course includes a review of more complex grammar topics, readings of cultural and literary texts, short stories, and newspaper articles for a better understanding of the francophone world. Students will improve fluency through listening-comprehension, writing, and discussions in the target language. (Sp). Prerequisite: Minimum 1.5 in FREN 201 or equivalent.
GEOG120	Introduction to Geography	3	An introductory course designed to provide contemporary geographic ideas and mapping techniques to study the interaction between people and their physical environment. Selected topics include soils, land forms, water, climate, natural vegetation, agriculture, urbanization, demographic patterns and resource utilization. (F). Prerequisite: Reading Level 5. Recommended: WRIT 121.
GEOG121	Physical Geography	4	Emphasizes landforms, flora and fauna, weather and climatic elements, land forms, mass wasting, hydrology, and soils. Offers an extensive study of these forces and phenomena through lecture and laboratory exercises. This study notes the environmental and ecological interrelationships between flora and fauna, and between the physical world and human society. (F,Sp,Su). Prerequisite: Reading Level 5. Recommended: Word software experience.
GEOG200	World Regional Geography	4	This course describes and analyzes human relationships with the natural and cultural environment and examines the physical and cultural aspects of the major regions of the world. International interdependency is examined to promote global awareness. (F,Sp,Su). Prerequisite: Reading Level 5.
GEOG202	Geography of North America	3	A study of the human and physical aspects of North America. This course will identify some of the factors that influence the quality of life and give character to each of the various subregions. (Sp). Prerequisite: Reading Level 5.
GEOG220	Weather, Forecasting & Climate	4	Introduces the meteorological and climatological sciences. The basics and the limitations of weather forecasting, as well as climatic data, will be examined. Concepts presented include cloud and precipitation types, cyclonic characteristics, computer guidance analysis, and the importance of physical geography in weather and climate. No science background is presumed. (F). Prerequisite: Reading Level 5 and Math Level 4.
GEOG295	Independent Study in Geography	1 to 4	An opportunity for self-directed learners to explore topics related to, but not taught in the curriculum. Students spend at least two hours per week for each credit. A detailed proposal must be submitted by the student for approval by the Department and supervising instructor prior to registration. (F,Sp,Su). Prerequisite: Department Approval.
GEOL221	Physical Geology	4	This course investigates the dynamic physical earth using a cause-effect theme, and emphasizes relationships of geologic cycles (tectonic/hydrologic) to modifications of earth's crust (e.g., volcanism, mountain building, rivers, glaciers) with introduction to environmental topics and earth resources. Laboratory includes mineral and rock identification, topographic and geologic map interpretation, and plate tectonics exercises. (F). Prerequisite: Reading Level 5 and Writing Level 4 and Math Level 4.
GEOL222	Historical Geology	4	Plate tectonics is used to integrate crustal and organic evolution in the dynamic global system. Includes methods of geologic inquiry and critical evaluation of evidence. Laboratory stresses interpretation of the rock and fossil records, reconstruction of past ecosystems, geologic maps, and plate tectonics' influence on the environment. (Sp). Prerequisite: Minimum 2.0 in GEOL 221 and Reading Level 5 and Writing Level 4 and Math Level 4.
GEOL230	Environmental Geology	4	Concepts of physical geology are applied to human interaction with the environment. Geologic resources (e.g., minerals, energy, and water) and hazards (e.g., earthquakes, landslides, and flooding) are explored. Laboratory includes rock and mineral identification, map reading and interpretation, evaluation of land use alternatives, and problem-solving activities related to environmental issues. (F,Sp). Prerequisite: Reading Level 5 and Writing Level 6 and Math Level 4.

COURSE	TITLE	CREDIT HOURS	TEXT
GERO100	Introduction to Human Aging	4	This course provides a basic orientation to the study of aging. Emphasis is placed on the psychosocial, cultural, and individual issues which impact aging persons and their families. Students will learn to identify and utilize resources across the human services network. (F,Sp). Prerequisite: Reading Level 5 and Writing Level 4.
GERO131	Pln for Older Adlts w/Dev Dis	0.5	This course presents an overview of the older adult with developmental disabilities including characteristics, demographics, public policy issues, and functional assessment. Michigan program initiatives are discussed and case studies are presented. (F,Sp). Prerequisite: None.
GERO164	Med & Alcohol Use/Older Adults	0.5	This course examines medication and alcohol use among older adults including prescription and nonprescription medicines, side effects, drug interactions, and strategies for using medicines wisely. Students learn to identify a substance abuse situation and how to make appropriate referrals. (F,Sp). Prerequisite: None.
GERO165	Dementia: Concepts and Causes	0.5	This course is an introduction to current concepts of dementia (Alzheimer's disease and related disorders) in older persons. It provides an overview of social, physical, psychological, and environmental factors associated with dementia. Relationships to depression, techniques for communicating with older persons with dementia, family dynamics, and community resources are discussed. (F,Sp). Prerequisite: None.
GERO169	Legal Rights of Older Adults	0.5	This course focuses upon issues such as guardianship, conservatorship, power of attorney, the living will, joint tenancy, nursing home residency, and civil commitment, including actual and perceived choices a person has as aging and illness occur. (F,Sp). Prerequisite: None.
GERO170	Depresn Late Life: Recog/Treat	0.5	This course provides an examination of depression in later life. Symptoms, causes, and assessment of depression are introduced, including distinctions between depression and other conditions. Basic techniques and guidelines for interacting with depressed older persons are presented. (F,Sp). Prerequisite: None.
GERO171	Tech: Care for Persons w/Demen	0.75	This course provides an introduction to techniques for working with persons with Alzheimer's disease and related disorders. The psychosocial needs of individuals and their families are a primary focus. Communication strategies, a task breakdown approach, environmental adaptations, addressing challenging behaviors, and the role of the family are discussed. (F,Sp). Prerequisite: None.
GERO173	Activ: Older Adults w/Alzheim	0.5	This course provides an overview of planning principles and processes effective in designing meaningful activities for older adults with Alzheimer's disease and related disorders. Practice opportunities are included. (F,Sp). Prerequisite: None.
GERO191	Special Topics in Gerontology	.25 to 4	This course consists of a series of seminars which address current issues in the field of gerontology. The seminars are designed to provide the most up-to-date information on selected, high-interest subjects concerning human aging. (F,Sp,Su). Prerequisite: Determined by Section.
GRET100	GIS Principles & Applications	3	This entry level course explores the fundamental concepts underlying all geographic information systems. These concepts will be demonstrated by examining how GIS is used in planning, law enforcement, medicine, asset management, transportation and other fields. (F). Prerequisite: None.
GRET110	Beginning ARC/GIS Desktop	3	This course is an introduction in the use of ArcGIS Desktop software. ArcGIS is a leading product used in the design of Geographic Information Systems (GIS). Students will learn the basic functionality of this software. GIS principles will also be covered. The course will rely on lectures, an on-line virtual campus course, and hands-on experience in the lab. (Sp). Prerequisite: Reading Level 3 and Math Level 4. Recommended: Computer experience.
GRET120	Advanced ARC/GIS	3	This course will build on the fundamentals learned in GRET 110. Students will use ArcGIS tools and processing to complete a series of assigned projects. Students will learn modeling and analysis techniques using a variety of vector and raster datasets. Students will conceptualize, design, implement and present a final project. (F). Prerequisite: Minimum 2.0 in GRET 110 (previously GRET 255).
GRET175	Special Topics/GIS Technology	.25 to 8	This course offers students the opportunity to learn new or advanced skills in Geographic Information Systems Technology and other related topics. Specific content may vary with each offering and will be related to the Geographic Information Systems Technology Program. (F,Sp,Su). Prerequisite: Determined by Section.

COURSE	TITLE	CREDIT HOURS	TEXT
GRET203	Beginning MicroStation	3	This entry-level, computer-aided design and drafting course uses MicroStation software on an Intergraph workstation or PC. Students will create 2-D drawings using basic graphic tools and procedures. (F,Sp). Prerequisite: None. Recommended: Basic CAD experience.
GRET210	Global Positioning Systems	3	This course covers the basic principles necessary to set up, operate, and run a Global Positioning System (GPS) receiving station, as well as collect information with a receiver. Data collection will be incorporated into a computer database program. The information link with Geographic Information Systems (GIS) and the use of GPS in GIS will be demonstrated. (F). Prerequisite: None.
GRET220	Hydrological Systems	3	This course will cover the various aspects of water resources as they pertain to the geographic information system environments. Water systems, natural and man-made, will be emphasized. The evaluation, analysis, and environmental impacts of various water features as they pertain to environmental research and development will be highlighted. (F). Prerequisite: None.
GRET240	Cartography in GIS	3	The basic principles, functions, and origins of maps will be discussed. The student will construct various types of maps. Computer-offered map planning and design along with how to read, print, and design maps will also be covered. (Sp). Prerequisite: Minimum 2.0 in (GRET 110 (previously GRET 255) or concurrently) and Reading Level 3 and Math Level 4.
GRET241	Remote Sens/AirPhoto Interpret	3	This course will include the development of skills necessary for basic interpretation of aerial photography data, how it is collected, and the ability to analyze maps created from the data collected in this method. The current technology and GIS relationship will be highlighted. (Sp). Prerequisite: Minimum 2.0 in GRET 110 (previously GRET 255) and Reading Level 3 and Math Level 4.
GRET260	Automating Workflows in GIS	3	This course will explore a variety of ways to automate workflows in ArcGIS Desktop product. In addition to using "batch" functionality in ArcGIS Desktop, the student will be exposed to Model Builder and creating Python scripts. (Sp). Prerequisite: Minimum 2.0 in GRET 110 (previously GRET 255) and Reading Level 3 and Writing Level 2 and Math Level 4.
GRET264	Web GIS	3	This course will explore a variety of ways to migrate GIS maps and data to the internet for public viewing. Technologies covered will include Google Earth, Bing maps, and ArcGIS Explorer. (F). Prerequisite: Minimum 2.0 in GRET 110 (previously GRET 255) and Reading Level 3 and Writing Level 2 and Math Level 4.
GRET271	Parcel Mapping	3	This course will teach students how to interpret and produce ownership parcels based on legal descriptions in a GIS environment. It will also introduce a software product, IcoMap, specifically designed for this purpose. (F). Prerequisite: Minimum 2.0 in GRET 110 (previously GRET 255) and Reading Level 3 and Writing Level 2 and Math Level 4.
GRET275	GIS Proj Mgmt & Implementation	3	This is a capstone course designed for students to develop the skills necessary for the design and implementation of GIS. The student will present his/her project to a client and train the client in the system that they developed. The student will also develop skills in project management and system documentation. (Sp). Prerequisite: Department Approval.
GRET277	Advanced GIS Data Structures	3	This course will explore the use of GIS technology in creating, managing, and using geographic networks. Transportation, utility, and hydrology networks will be created and analyzed using the ArcGIS Desktop product. (Sp). Prerequisite: Minimum 2.0 in GRET 110 (formerly GRET 255) and Reading Level 3 and Writing Level 2 and Math Level 4
GRET290	GIS Internship	2 to 4	This course provides Geographic Information Systems (GIS) students with practical work experience in industry. Students work for an employer in a supervised environment which provides an opportunity to apply knowledge and skills learned in the classroom and lab to an actual job situation. (F, Sp, Su). Prerequisite: Department Approval.
GRET295	GRET Project Lab	1 to 4	This project lab is designed for students who wish to pursue a specialty area in GIS beyond that which is offered in our curriculum. Inquiry through research and design is required. (F,Sp,Su). Prerequisite: Department Approval.
GRMN115	Conversational German I	3	The first course in a two-semester sequence for persons with little or no knowledge of German. Emphasizes listening and speaking skills. Students learn correct pronunciation, essential language structures, and a practical vocabulary applied in conversational exchanges. Aspects of German culture are introduced through multimedia presentations. (F,Sp,Su). Prerequisite: None.

COURSE	TITLE	CREDIT HOURS	TEXT
GRMN121	Elementary German I	4	First course of a two-semester sequence in elementary German. Course offers practice in four language skills: listening comprehension, speaking, reading, and writing. Communicative approach is combined with a solid grammar foundation. Contemporary German life and culture is studied. (F, Sp, Su). Prerequisite: Reading Level 5.
GRMN122	Elementary German II	4	Second course of a two-semester sequence in elementary German. This course offers more advanced practice in the four basic language skills: listening comprehension, speaking, reading, and writing. Communicative approach is combined with more complex structure as well as familiarization with contemporary life and culture in Germany, Austria, and Switzerland. (F,Sp,Su). Prerequisite: Minimum 1.5 in GRMN 121 or equivalent.
GRMN201	Intermediate German I	4	First course of a two-semester sequence in intermediate German. Intensive practice provided in the basic skills: speaking, listening comprehension, reading, and writing. Includes composition, review of grammar, and viewing and discussion of contemporary German films. Class is taught mainly in German. (F). Prerequisite: Minimum 1.5 in GRMN 122 or equivalent.
GRMN202	Intermediate German II	4	Second course of a two-semester sequence in intermediate German with advanced practice in the basic skills: speaking, listening comprehension, reading, and writing. Includes a review of advanced structures, composition, and viewing and discussion of contemporary German Films. Class is taught mainly in German. (Sp). Prerequisite: Minimum 1.5 in GRMN 201 or equivalent.
GSEM100	General Related Seminar	.25 to 5	This course will cover a variety of topics in general related fields. For individuals already employed in the environment seeking to upgrade their skills or anyone looking to be employed in a particular career field. (F,Sp,Su). Prerequisite: None.
HERT110	Equipment Introduction	5	This course is intended to give the student an overall review of legal and work responsibilities of an operator of heavy construction equipment. Safety, inspections, and familiarization of equipment and operation standards for all major pieces of equipment will be stressed. (F,Sp,Su). Prerequisite: None.
HERT120	Heavy Engine Rebuild	6	Upon completion of this course the successful student will be able to efficiently and accurately rebuild a heavy duty diesel engine. (F). Prerequisite: None.
HERT125	Heavy Equipment Electronics	5	Upon completion of this course the successful student will be able to diagnose and repair electrical problems on heavy duty equipment. (Sp). Prerequisite: None.
HERT130	Equipment Hydraulics	6	Upon completion of this course the successful student will be able to diagnose and repair hydraulic problems found typically on heavy duty construction equipment. (F). Prerequisite: None.
HERT135	Diesel Fuel Systems	4	Upon completion the successful student will be able to diagnose and repair fuel system failures found on heavy diesel engines. (Su). Prerequisite: None.
HERT140	Equipment Powertrain	5	Upon completion of this course the successful student will be able to diagnose and repair powertrain components in heavy duty equipment. (Sp). Prerequisite: None.
HERT145	Equipment Service Writing	4	Upon completion the student will be able to make repair estimates on a disabled piece of construction equipment. (Su). Prerequisite: None.
HERT210	Heavy Equipment Internship	3	Students earn credits while employed performing duties associated with the heavy equipment operator or repair technician occupations. The student will work under the general supervision of an experienced equipment operator or repair technician and will learn current industry practices. The program coordinator must approve the training station and working conditions. (F,Sp,Su). Prerequisite: Department Approval.
HIST150	African-American History	4	Traces the developments which led to the African slave trade, the slave systems in North and South America, the cultural heritage of the African American in the Americas, and the problems of race in North American culture. (Sp). Prerequisite: Reading Level 5.
HIST210	Studies in American History	4	Covers problems of research, writing, philosophy, and interpretation of history, involving a detailed examination of a particular area of American history. (Sp,Su). Prerequisite: Reading Level 5.
HIST211	U.S. History to 1877	4	A political, legal, economic, social and cultural history of the United States from colonial beginnings to 1877. (F,Sp,Su). Prerequisite: Reading Level 5 and Writing Level 6.

COURSE	TITLE	CREDIT HOURS	TEXT
HIST212	U.S. History: 1877 to Present	4	A political, legal, economic, social, and cultural history of the United States from the end of reconstruction to the present. (F,Sp,Su). Prerequisite: Reading Level 5 and Writing Level 6.
HIST214	African History	4	Surveys African history with emphasis on pre-colonial and colonial Africa, nationalism and the struggle for independence, colonialism and economic development/underdevelopment, and cultures and traditions as factors in development. (F). Prerequisite: Reading Level 5 and Writing Level 6. Recommended: WRIT 121 or WRIT 131.
HIST220	Michigan History	4	A survey of the political, economic, and social development of Michigan from precolonial times to the present. (F,Sp). Prerequisite: Reading Level 5 and Writing Level 6. Recommended: WRIT 121 or WRIT 131.
HIST230	British History	4	A survey of the political, economic, legal, constitutional, and social forces which shaped British history and society from earliest times to the present with special emphasis on the interactions of British and American institutions, values, and ideas. (Sp). Prerequisite: Reading Level 5 and Writing Level 6. Recommended: WRIT 121 or WRIT 131.
HIST240	Latin American History	4	A survey of the history and culture of Latin America from pre-Columbian civilizations to the present. This course will examine political, social, and cultural developments in Latin America and assess the role of colonialism, nationalism, and world economic trends in shaping Latin American countries. (Sp). Prerequisite: Reading Level 5. Recommended: WRIT 121 or WRIT 131.
HIST250	History of Modern Asia	4	This course will survey political, social, and economic developments as well as principal cultural trends in the major civilizations of Asia (excluding Western Asia) from approximately the 17th Century to the present. The course will also include an examination of the interactions among Asian societies and between Asia and the West. (F). Prerequisite: Reading Level 5. Recommended: WRIT 121 or WRIT 131.
HIST260	Conflict in Southern Africa	4	Study of historical-cultural origins and contexts of conflicts in Zimbabwe and Southern Africa with emphasis on socioeconomic causes of conflicts, cultural differences and conflicts, problems of development as sources of conflicts, inter-African conflicts, settler-African conflicts, international dimensions of conflicts, and solutions to conflicts. (Sp). Prerequisite: Reading Level 5. Recommended: WRIT 121 or WRIT 131.
HIST271	History of US Foreign Policy	4	An historical exploration of political, economic, cultural and strategic forces that shaped the development of American foreign policy from the colonial era to the present. The course examines the historic foundations as well as the problems, challenges and institutions that influenced the making of foreign policy in the United States. (Sp). Prerequisite: Reading Level 5 and Writing Level 6. Recommended: HIST 211 or HIST 212.
HIST295	Independent Study in History	1 to 4	An opportunity for self-directed learners to explore topics related to, but not taught in the curriculum. Students spend at least two hours per week for each credit. A detailed proposal must be submitted by the student for approval by the Department and supervising instructor prior to registration. (F,Sp,Su). Prerequisite: Department Approval.
HMFS101	Introduction to Hospitality	3	Career opportunities in various types of hotels and restaurants are discussed; includes trends and explains the importance of the various segments as they work together to provide quality guest service. (F,Sp,Su). Prerequisite: Reading Level 4 and Writing Level 4.
HMFS102	Special Topics in Hospitality	1 to 4	This course explores current issues, knowledge, and skills relevant to the hospitality profession. Specific topics vary by semester. Check the semester schedule book. (F,Sp,Su). Prerequisite: Reading Level 4 and Writing Level 4.
HMFS110	Sanitation and Safety	3	Safe food handling, prevention of food spoilage, and transfer of bacteria, maintenance of equipment and facilities, and importance of good personal hygiene in the work place are discussed; HACCP explained. OSHA laws described and illustrated. Includes examinations for national and state sanitation. (F,Sp,Su). Prerequisite: Reading Level 4 and Writing Level 4.
HMFS125	Hospitality Service Excellence	4	This course is designed to provide a foundation in dining room operations, the art of excellent service, creating positive guest relations, and hospitality professionalism. Students will learn to develop critical thinking and interpersonal skills as they relate to superior service, variety of table service styles and professional etiquette. Focus is on the dynamics of providing total customer satisfaction. (F). Prerequisite: Reading Level 4 and Writing Level 4.
HMFS134	Nutrition and Healthy Eating	3	Eating out sensibly discussed plus explanation of nutrients and their role in maintaining health. Examination of food patterns, weight control and maintaining a healthy lifestyle with reasonable exercise. Includes nutritional analysis of 24-hour food consumption. (F,Sp). Prerequisite: Reading Level 4 and Writing Level 4.

COURSE	TITLE	CREDIT HOURS	TEXT
HMFS135	Hospitality Purchasing	3	Responsibilities of a purchasing agent and role with vendors in an effective purchasing program are explained; focus on writing specifications, purchasing for all categories of foods and supplies, cutting test procedures and standard receiving practices. Emphasis on how to make effective managerial purchasing decisions. (F). Prerequisite: Minimum 2.0 in HMFS 101 or concurrently and Reading Level 4 and Writing Level 4. Recommended: Minimum 2.0 in HMFS 131.
HMFS137	Catering Management	4	Sequential steps to successful catering are presented from determining client needs, planning of menus, purchasing, costing and pricing events establishing equipment requirements, examining both on and off-premise functions, recognizing sanitation concerns, and designing contractual agreements with clients. Lab preparation and presentation of a catered event. (Sp). Prerequisite: Reading Level 4 and Writing Level 4. Recommended: Minimum 2.0 in (HMFS 110 and HMFS 132 and HMFS 135).
HMFS170	Menu Management and Design	3	Design a menu using accurate descriptive terms, calculation of selling prices, layouts recommended, selection of fonts and colors. Includes analysis of menus including accuracy (truth in menu), the menu as a marketing tool, and current trends. Semester project included. (F). Prerequisite: Minimum 2.0 in HMFS 131 or concurrently and Reading Level 4 and Writing Level 4. Recommended: Minimum 2.0 in (HMFS 101 and HMFS 135).
HMFS190	Internship	3	This 200 hour internship is a capstone course required for all Hospitality students that will provide hands-on experience in a food service faculty or lodging property. The rotational work experience and required course projects will coincide with industry principles, techniques, skills, and procedures mastered in previous courses. Students are responsible to find their own internship site. (F,Sp). Prerequisite: Reading Level 4 and Writing Level 4 and Department Approval. Recommended: Have completed a minimum of 30 credits.
HMFS203	Hospitality Law	3	Legal problems and issues commonly faced in hospitality operations including rights and responsibilities of innkeepers, restaurants, caterers, and other food establishments, guest relationships, guest property rights frauds, employment safety, tax and liquor laws. Current court cases discussed. (Sp). Prerequisite: Minimum 2.0 in HMFS 101 or concurrently and Reading Level 5 and Writing Level 4. Recommended: Minimum 2.0 in (HMFS 131 and/or HMFS 206).
HMFS204	Hospitality HR Management	3	Supervisor's role as a leader, coach and personnel manager; topics include managing culturally diverse workers plus recruitment, selection, orientation, training, evaluating, and disciplining employees. Discussion on retaining employees, sexual harassment, and worker motivation. (F,Sp). Prerequisite: Reading Level 5 and Writing Level 4. Recommended: HMFS 101 and HMFS 170 and HMFS 203.
HMFS205	Hospitality Leadership	3	This course takes a look at principles, practices and activities needed to become a leader in today's hospitality industry. Topics include principle centered leadership, proactive leadership activities, advanced planning methods for successful leadership, balancing leadership and personal activities and recognizing, developing and maintaining habits that will produce positive outcomes for both leaders and employees of the industry. (F,Sp). Prerequisite: Minimum 2.0 in HMFS 101 or concurrently and Reading Level 5 and Writing Level 4. Recommended: Minimum 2.0 in (HMFS 131 and HMFS 203 and HMFS 204).
HMFS206	Rooms Division Management	3	Reservation and sale of hotel rooms, operation of front office, review of check-in and check-out procedures, credit card processing, property security, daily audit and the importance of keeping accurate records. Includes yield management and determining room rates, forecasting based on statistical analysis, posting accounts and budgeting. (Sp). Prerequisite: Minimum 2.0 in HMFS 101 or concurrently and Reading Level 5 and Writing Level 4.
HMFS229	Convention/Meeting Management	3	Determining client needs, evaluating capability of facility and community resources and marketing for convention business is included. Methods of evaluating successful conventions and meetings are examined and the use of software programs to book events and maintain client records. (Sp). Prerequisite: Minimum 2.0 in HMFS 101 or concurrently and Reading Level 5 and Writing Level 4. Recommended: Minimum 2.0 in (HMFS 131 and/or HMFS 206) and HMFS 170.
HMFS232	Food and Labor Cost Control	3	Strategies for making a profit and controlling food, beverage, and labor costs are examined. Includes discussion of quality versus cost issues and an analysis of records to detect problems. Includes examination of facility management strategies to reduce costs and save energy. Methods for increasing revenues are discussed and evaluated. (F,Sp). Prerequisite: Minimum 2.0 in HMFS 131 or concurrently and Reading Level 5 and Writing Level 4 and Math Level 4.
HONR151	Honors Colloquy I	1	Interdisciplinary forum for Honors Program members and other interested students. Includes presentations by experts in such fields as the arts, business, communication, education, humanities, government, mathematics, science, and the social sciences, followed by discussion. Topics concerning international issues, diversity, and technology are often featured. Students write essays reacting to each presentation. (F). Prerequisite: Honors Program Approval.

COURSE	TITLE	CREDIT HOURS	TEXT
HONR152	Honors Colloquy II	1	Interdisciplinary forum for Honors Program members and other interested students. Includes presentations by experts in such fields as the arts, business, communication, education, humanities, government, mathematics, science, and the social sciences, followed by discussion. Topics concerning international issues, diversity, and technology are often featured. Students write three substantive research papers. (F). Prerequisite: Honors Program Approval.
HONR155	Community Service Practicum I	1	A practicum course for freshman students requiring a minimum of 32 hours of volunteer service with a community agency of the student's choice and attendance at three classroom discussion sessions. Students will develop practical skills and evaluate their service in terms of its relevance to the community and their educational, career, and life goals. (Sp). Prerequisite: Honors Program Approval.
HONR156	Community Service Practicum II	1	A practicum course for sophomore students requiring a minimum of 32 hours of volunteer service with a community agency of the student's choice and attendance at three classroom discussion sessions. Students will develop practical skills and evaluate their service in terms of its relevance to the community and their educational, career, and life goals. (Sp). Prerequisite: Honors Program Approval.
HONR295	Honors Independent Study	1 to 4	An opportunity for self-directed learners to explore topics related to, but not taught in the curriculum. Students spend at least two hours per week on course work. A detailed proposal must be submitted by the student for approval by the Honors Program Director and supervising instructor prior to registration. (F,Sp,Su). Prerequisite: Honors Program Approval.
HUMS120	Masterpieces of Art & Music	4	This course is an introduction to the masterpieces of art and music from ancient to modern times. Artistic and musical innovations and contributions from Europe and America will be explored. The continuing influence and validity of art and music from the past on contemporary developments will be explored. (F,Sp,Su). Prerequisite: Reading Level 5 and Writing Level 4.
HUMS125	Japan: Past and Present	4	This course traces the development of Japan's cultural tradition with strong emphasis on history, religion, literature, and the arts. Further, this course demonstrates that modern Japan can best be understood in light of its distinctive traditions. (Sp). Prerequisite: Reading Level 5 and Writing Level 6. Recommended: WRIT 121 or WRIT 131.
HUMS140	Art of Being Human	4	Through an interdisciplinary exploration of art, dance, history, literature, music, philosophy, religion, and theater, students will analyze human experience and examine their values. An active learning environment using team-teaching will encourage self-discovery and understanding of the issues and concerns found in the Humanities and Performing Arts. (F). Prerequisite: Reading Level 5 and Writing Level 6.
HUMS160	Mythology	4	Classical Greek and Roman myths constitute the first half of the course with the remainder chosen from at least two of the following areas: African, American, Far Eastern, Medieval European, Near Eastern, or Norse. Reading and analysis of primary sources in translation and their cross-cultural comparison are emphasized. (F,Sp,Su). Prerequisite: Reading Level 5 and Writing Level 6. Recommended: WRIT 121 or WRIT 131.
HUMS211	Art History to the Renaissance	4	Surveys the history of painting, sculpture, and architecture of world civilizations in Africa, the Americas, Asia and Europe from preliterate times to the 15th century. Emphasizes analysis and comparison of artistic concepts, styles and techniques; and investigates how the arts reflect ideas, issues, and values of society and the individual. (F,Sp,Su). Prerequisite: Reading Level 5 and Writing Level 6. Recommended: WRIT 121 or WRIT 131.
HUMS212	Art Hist from the Renaissance	4	Surveys the history of painting, sculpture, and architecture of world civilizations in Africa, the Americas, Asia, and Europe from the 15th to the 20th century. Emphasizes analysis and comparison of artistic concepts, styles and techniques; and investigates how the arts reflect ideas, issues, and values of society and the individual. (F,Sp). Prerequisite: Reading Level 5 and Writing Level 6. Recommended: WRIT 121 or WRIT 131.
HUMS213	World Civilizations to 1600	4	Surveys the literature and art, science and technology, and the social and political systems of major civilizations in Africa, Asia, Europe, and the Americas to approximately the 17th century. Emphasizes the contributions of early civilizations to the creativity, richness, and diversity of the human condition. (F,Sp,Su). Prerequisite: Reading Level 5 and Writing Level 6. Recommended: WRIT 121 or WRIT 131.

COURSE	TITLE	CREDIT HOURS	TEXT
HUMS214	World Civilizations from 1600	4	Surveys the literature and art, science and technology, and the social and political systems of major civilizations in Africa, Asia, Europe, and the Americas from approximately the 17th century to the present. Emphasizes the contributions of modern civilizations to the creativity, richness, and diversity of the human condition. (F,Sp,Su). Prerequisite: Reading Level 5 and Writing Level 6. Recommended: WRIT 121 or WRIT 131.
HUMS215	American Cultural Experience	4	This course will explore the cultural foundations of the United States from the period of exploration to the present. This is an interdisciplinary course which examines central themes of American culture and their representation in history, literature, art, philosophy, and religion. (Sp). Prerequisite: Reading Level 5 and Writing Level 6. Recommended: WRIT 121 or WRIT 131.
HUMS225	Grt Lake Native Amer Hist&Trad	4	Surveys the Great Lakes Native American culture and people, the differences in oral tradition and written histories of the Great Lakes Anishnaabek (First People), the Talking Circle for community problem solving, and an introduction to the language. (F,Sp). Prerequisite: Reading Level 5 and Writing Level 6. Recommended: WRIT 121 or WRIT 131.
HUMS260	Ancient Egypt	4	This course explores developments in Egyptian art and architecture, religion and kingship, Pyramids, tombs, hieroglyphs and the land of Egypt are emphasized. Great discoveries and discoverers in archaeology past and present are also featured. (F). Prerequisite: Reading Level 5 and Writing Level 6. Recommended: WRIT 121 or WRIT 131.
HUMS265	Ethical Issues in Medicine	3	This course will present some of the ethical dilemmas which arise in relation to health care and develop a framework for ethical decision-making with which to deal with these and other related problems. It is designed for both health care professionals and others who are interested in these issues. (F,Su). Prerequisite: None.
HUMS295	Ind Study in Humanities	1 to 4	An opportunity for self-directed learners to explore topics related to, but not taught in the curriculum. Students spend at least two hours per week for each credit. A detailed proposal must be submitted by the student for approval by the Department and supervising instructor prior to registration. (F,Sp,Su). Prerequisite: Department Approval.
HUSE100	Introduction to Human Services	3	This course presents an overview of human services evolution, the services provided, and the populations served. Emphasis is on community, clients, trends, ethics, and skills used in diverse settings. The approach is generalist in nature. This course complies with the Ethic Standards, National Organization of Human Services. (F,Sp). Prerequisite: Reading Level 3 and Writing Level 4.
HUSE105	Personal Dynamics/Interviewing	4	The nature of personal development, knowledge and values are examined. The course integrates diversity issues with the demonstration of the knowledge, skills, and values of the "helping interview" through structured exercises and role playing. This course complies with the Ethical Standards of the National Organization of Human Services. (F,Sp). Prerequisite: Reading Level 4 and Writing Level 4. Recommended: Minimum 2.5 in (HUSE 100 or SOWK 101).
HUSE110	Child Abuse and Neglect	3	This course reviews the history and scope of child abuse and neglect, including socioeconomic and psychological factors. It explores the world of abnormal rearing, roles of community agencies and disciplines, approaches to treatment and prevention, coordination of cases and services, and legal aspects and the law. (F,Sp). Prerequisite: None.
HUSE112	Understanding Substance Abuse	4	Students learn the multiple factors and cycles contributing to addiction. Reasons for abuse, dependency dynamics, addiction prevention and treatment considerations are explored. Legislation is studied. Issues and treatment regarding addiction and special populations are discussed. Ethical issues include professional competency and responsibility, confidentiality, and the commitment to nondiscrimination. (F,Sp). Prerequisite: None.
HUSE242	The Family: Addiction/Violence	3	This course provides conceptual frameworks to understand, assess, and effectively intervene/interact in a counseling fashion with the chemically dependent family. Attention is brought to the socioeconomic, cultural, and psychological factors of chemical dependency and family violence. Intervention techniques, the role of law enforcement, legislative bodies, and social services agencies are discussed. (Sp). Prerequisite: None. Recommended: Minimum 2.5 in HUSE 105 and HUSE 112.
HUSE253	Client Group Dynamics	3	This course examines the ethical standards for group practice and the diversity of groups. Attention is given to the stages of group process and dynamics. Theoretical approaches to group work are discussed.(Sp). Prerequisite: Reading Level 4 and Writing Level 4. Recommended: Minimum 2.5 in HUSE 100 or SOWK 101 .

COURSE	TITLE	CREDIT HOURS	TEXT
HUSE282	Human Services Practicum I	4	This course combines classroom training with beginning field experience (10 hours per week) in a community-based human services agency. Emphasis is on knowledge of the community structure, funding bases, and the internal working of human services organizations. Opportunities in the labor force, certification requirements, and networking are explored. (F). Prerequisite: Department Approval and minimum 2.5 in GERO, HUSE, and SOWK courses and minimum 2.0 in General Education courses. Recommended: Human Services experience.
HUSE284	Human Services Practicum II	4	This course provides classroom training on principles of human services delivery with advanced practical experience (10 hours per week) in a community-based human services agency. Emphasis is on identifying systems and resources to link the systems with the people and how to mobilize the systems and the people. (Sp). Prerequisite: Minimum 2.5 in HUSE 282 and Department Approval.
HUSE293	Human Services Special Topics	.25 to 4	A number of topics related to the human service field will be taught in this course. Topics will be of interest to current students, members of the community, paraprofessionals and professionals working in the field. Specific, up-to-date content will vary with each offering. (F,Sp,Su). Prerequisite: Determined by Section.
HUSE295	Peer Support Specialist Trng	3	Mental health recovery and implementation activities are demonstrated based on knowledge, skills and values. Individuals attending have a serious mental illness, past experience in receiving public mental health services and are working in community mental health. Curriculum includes structured exercises in ethics, problem solving, effective listening facilitating recovery dialogs, wellness, Medicaid reimbursement, person-centered planning and self-determination. (F,Sp,Su). Prerequisite: Requires approval of Michigan Department of Community Health (F,Sp,Su)
HUSE297	Human Services Indep Study	1 to 3	This course includes special research, directed study, or service-learning projects in human services areas, such as gerontology, social work, substance abuse, or related areas. It requires at least 16 hours of independent work for each credit. A learning contract specifying objectives, activities and outcomes is required. (F,Sp). Prerequisite: Department Approval.
HVAC100	Fundamentals of HVAC	3	This course is an introduction to the mechanical refrigeration cycle and its individual components. Compressors, evaporators, condensers and metering devices as well as their functions are covered in detail. Exercises in psychrometrics and an introduction to system design are also covered. (F,Sp,Su). Prerequisite: Reading Level 3 and Writing Level 2.
HVAC102	Industrial/Construction Safety	2	This course covers safety in the industrial workplace and on construction worksites. Included are local, state and federal safety regulations. The focus will be on the prevention of accidents but will teach the correct response if an accident should occur. First aid, CPR/AED certificates will be issued upon successful completion. (F, Sp, Su). Prerequisite: Reading Level 3 and Writing Level 2. Course Note: This course requires students to be certified in CPR and First Aid as part of the course grade. Training will occur as part of traditional on-campus sections. Online students have the option of attending CPR and First Aid sessions at LCC's West Campus. Students who cannot travel to LCC will need to make other arrangements to become certified.
HVAC103	HVAC/R Piping	3	This course is designed to teach students about the common types of pipes used in the HVAC/R industry. Topics will include safety, tools and fasteners, common types of pipe, pipe joints, pipe-fittings, and general guidelines for working with pipe and tubing. Hands-on experience with piping is included. (F, Sp, Su). Prerequisite: Minimum 2.0 in (HVAC 102 or ELTE 102 or METS 102 or WELD 102 or concurrently).
HVAC105	Sheet Metal Fab & Installation	2	Designed to aid the installer in the skills and techniques for the proper duct sizing, layout, and installation of a residential air distribution system. Topics include sheet metal layout, identification of sheet metal fittings, and their use. Safe and proper use of tools and equipment used in the trade. (F,Sp,Su). Prerequisite: Minimum 2.0 in (HVAC 102 or ELTE 102 or METS 102 or WELD 102 or concurrently) and (minimum 2.0 in (MATH 050 or concurrently) or Math Level 4).
HVAC110	Applied Electricity I	3	An introduction to basic electricity (AC and DC) using both theory and applied study methods. Topics will include electrical components, symbols, basic schematic diagrams, Ohm's Law applied to series and parallel circuits and motor types and usages. In conjunction with lab exercises, meters and their proper usage will be covered. (F,Sp,Su). Prerequisite: Minimum 2.0 in (HVAC 102 or ELTE 102 or METS 102 or WELD 102 or concurrently) and Math Level 3.
HVAC111	Applied Electricity II	3	The study of motors with an emphasis on theory, troubleshooting and servicing. Motor controls, control circuits, protection devices and discussion of energy conservation as related to motors will be covered in detail. (F,Sp). Prerequisite: Minimum 2.0 in (HVAC 100 and HVAC 110) and Reading Level 3 and Writing Level 2 and Math Level 3.

COURSE	TITLE	CREDIT HOURS	TEXT
HVAC120	Heating I	3	This course covers basic construction and function of components in residential gas and oil fired furnaces with detail on theory, application, troubleshooting, and servicing standard heating systems. Installation procedures and codes are also covered. Additional equipment studied will include humidifiers, air cleaners and vent dampers. (F,Sp). Prerequisite: Minimum 2.0 in (HVAC 100 and HVAC 110).
HVAC130	Air Conditioning I	3	This course covers the fundamentals and principles of residential air conditioning systems. Students will learn soldering and brazing of tubing, wiring, component testing, evacuation procedures, charging and maintenance of both split systems, as well as small packaged units. (F,Sp). Prerequisite: Minimum 2.0 in (HVAC 100 and HVAC 110).
HVAC170	Special Topics in HVAC/R	.25 to 8	This course offers students the opportunity to learn new or advanced skills in Heating, Ventilation, Air Conditioning and/or Refrigeration, and other related topics. Specific content may vary with each offering but will be related to HVAC/R Technology and the profession. (F,Sp,Su). Prerequisite: Determined by Section.
HVAC201	Mechanical Code	4	A fundamental course designed to acquaint the student with the methods and techniques used in field inspection of mechanical systems. The Michigan Mechanical Code and excerpts from the International Fuel Gas Code and Michigan Residential Code will be discussed. (F,Sp). Prerequisite: Minimum 2.0 in (HVAC 120 and HVAC 130) and Reading Level 3 and Writing Level 2 and Math Level 3.
HVAC220	Heating II	3	This course covers the fundamentals and principles of electronic ignition systems including troubleshooting and servicing. The major emphasis is placed on high efficiency and condensing furnaces to include sequence of operation, troubleshooting, servicing, and proper installation. (F,Sp). Prerequisite: Minimum 2.0 in (HVAC 111 and HVAC 120).
HVAC221	Introduction to Hydronics	3	Covers hot water and steam residential heating systems, piping and all accessories, safety controls, expansion tanks, zone valves, installation procedures and codes. Students perform testing, troubleshooting, adjusting and servicing of components to insure maximum efficiency. (F,Sp). Prerequisite: Minimum 2.0 in HVAC 120.
HVAC230	Air Conditioning II	3	This course covers advanced air conditioning, light commercial equipment, water cooled units, cooling towers, and the wiring of both control and line voltage circuitry. The latest in test equipment and meters will aid the student in becoming proficient in servicing and maintaining commercial equipment. (F,Sp). Prerequisite: Minimum 2.0 in (HVAC 111 and HVAC 130) and Reading Level 3 and Writing Level 2 and Math Level 3.
HVAC231	Heat Pump	3	This course deals entirely with heat pumps (air-to-air, water-to-air) and their installation, servicing, proper application or heat pump components, and extensive wiring schematics. (F). Prerequisite: Minimum 2.0 in HVAC 230.
HVAC240	Refrigeration I	3	This course includes domestic refrigeration as applied to refrigerators, freezers and de-humidifiers. Course content includes applications, operation and servicing of sealed systems, electrical and cabinet styles. (F). Prerequisite: Minimum 2.0 in HVAC 230 or concurrently.
HVAC241	Refrigeration II	3	This course provides instruction in light commercial refrigeration to include low and medium temperature applications as applied to ice machines, walk-ins, reach-ins, and display cases. (Sp). Prerequisite: Minimum 2.0 in HVAC 240 .
HVAC251	Fund of Direct Digital Control	3	Basic fundamentals and principles of direct digital controls will be covered through demonstrations of computer basics, control strategies for computer based energy management systems, and installation components according to industry standards. (F). Prerequisite: Minimum 2.0 in HVAC 230. Recommended: Basic Windows computer skills.
HVAC280	EPA 608 Certification Review	1	This course prepares students for the EPA Section 608 Certification test which is required to work on appliances containing CFC, HCFC or HFC refrigerants. This course will not certify technicians in EPA Section 609 - Automotive Air Conditioning. Students who successfully complete the course will take the proctored EPA Section 608 Certification Test. (F,Sp). Prerequisite: None. Recommended: HVAC 130 or HVAC field experience.
HVAC290	HVAC Internship	2 to 4	This course provides Heating, Ventilating, Air Conditioning and Refrigeration students with practical work experience in industry. Students work for an employer in a supervised environment which provides an opportunity to apply knowledge and skills learned in the classroom and lab to an actual job situation. (F, Sp, Su). Prerequisite: Department Approval.

COURSE	TITLE	CREDIT HOURS	TEXT
IDMS150	Sonographic Directed Study	1 to 4	Provides selection of content from the Diagnostic Medical Sonography curriculum to update or enhance current knowledge and skill for returning students and health care professionals. Through evaluation of previous learning, examinations, self study, and scheduling into needed lectures, labs and clinical experience, students are advanced placed or readmitted into the Diagnostic Medical Sonography program. (F,Sp,Su). Prerequisite: Department Approval.
IDMS169	Intro to Sonographic Scanning	2	Sonography students are introduced to scanning and sonographic positioning as well as imaging techniques. Normal anatomy of the abdomen including liver, biliary tree, kidneys, spleen, and pancreas will be explored. (Su). Prerequisite: Admission to Diagnostic Medical Sonography Program and Reading Level 5 and Writing Level 6. Co-Requisite Course(s): IDMS 200 and IDMS 270.
IDMS200	Sonographic Introduction	2	This course is an introduction to sonography including equipment history, criteria, limitations of ultrasound, and sonographer ethics. General information is provided regarding patient preparation, history/clinical correlation, and basic nursing care specific to ultrasound. Strong emphasis is placed on terminology and abbreviations most commonly used with ultrasound. (Su). Prerequisite: Admission to Diagnostic Medical Sonography Program and Reading Level 5 and Writing Level 6. Co-Requisite Course(s): IDMS 169 and IDMS 270.
IDMS201	General Sonography I: Abdomen	4	This course provides the student with cross-sectional anatomy and pathology as it relates to sonographic scanning of the abdomen, abdominal vessels, thyroid, prostate, scrotum, breast, and neurosonology of the neonate. (F). Prerequisite: Minimum 2.5 in (IDMS 169 and IDMS 200 and IDMS 270). Co-Requisite Course(s): IDMS 202 and IDMS 234 and IDMS 271 and IDMS 280.
IDMS202	OB/GYN Sonography I	4	This course provides the student with cross-sectional anatomy and pathology as it relates to gynecological and obstetrical sonography. Fetal anatomy and appearance will be presented. (F). Prerequisite: Minimum 2.5 in (IDMS 169 and IDMS 200 and IDMS 270). Co-Requisite Course(s): IDMS 201 and IDMS 234 and IDMS 271 and IDMS 280.
IDMS234	Sonographic Physics	2	The student will study the fundamental principles of acoustical physics, how sound is produced and manipulated, and how it reacts in various mediums. (F). Prerequisite: Minimum 2.5 in (IDMS 169 and IDMS 200 and IDMS 270). Co-Requisite Course(s): IDMS 201 and IDMS 202 and IDMS 271 and IDMS 280.
IDMS245	Sonographic Instrumentation	2	The student will be introduced to the mechanics of A-Mode, M-Mode, Doppler, and Real-time ultrasound equipment. Accessory equipment such as the camera, transducer, and cathode ray tube will be presented. Methods of quality assurance will also be presented. (Sp). Prerequisite: Minimum 2.5 in IDMS 234. Co-Requisite Course(s): IDMS 265 and IDMS 266 and IDMS 281.
IDMS250	Vascular Technology I	6	The student will study the physical principles of venous fluid dynamics and Doppler measurement analysis with its relationship to physiology and pathology, including risk factors, disease processes, correlative tests, and treatments. The student will review of the circulatory system and vascular anatomy including, carotid arteries, intracranial blood vessels, upper and lower extremity veins and penis.(F,Sp). Prerequisite: (RDMS or RT(S) credential or Graduated from an accredited ultrasound program and current sonography employment) and Department Approval. Co-Requisite Course(s): IDMS 255
IDMS251	Vascular Technology II	6	The student will study arterial fluid dynamics and Doppler measurement analysis with its relationship to physiology and pathology, including risk factors, disease processes, correlative tests, and treatments. The student will review vascular anatomy including, upper and lower extremity arteries and abdominal vasculature. Bypass grafts, stents and hemodialysis access will be studied. Quality measurements and safety are reviewed. (F,Sp). Prerequisite: Prerequisite: Minimum 2.5 in IDMS 250 and Department Approval. Co-Requisite Course(s): IDMS 256
IDMS255	Vascular Scan Lab I	2	Students will learn scanning and sonographic positioning as well as imaging techniques in color and spectral Doppler as related to the vascular system. Students will identify normal vascular anatomy including carotid, circle of Willis, upper and lower extremity veins and impotence testing.(F,Sp). Prerequisite: (ARDMS or RT(S) credential or Graduated from an accredited ultrasound program and current sonography employment) and Department Approval. Co-Requisite Course(s): IDMS 250.
IDMS256	Vascular Scan Lab II	2	Students will learn scanning and sonographic positioning as well as imaging techniques in color and spectral Doppler, plethysmography and segmental pressures as related to the vascular system. Students will identify normal vascular anatomy including, aorta, IVC, renal vasculature, portal system, upper and lower extremity arteries, and Hemodialysis grafts. (F,Sp). Prerequisite: Minimum 2.5 in IDMS 255 and Department Approval. Co-Requisite Course(s): IDMS 251.
IDMS265	General Sonography II	4	The student will be presented with the identification of and interpretation of anatomy and pathology on sonographic exams as it relates to the abdomen, venous system, and small parts. (Sp). Prerequisite: Minimum 2.5 in IDMS 201. Co-Requisite Course(s): IDMS 245 and IDMS 266 and IDMS 281.
IDMS266	OB/GYN Sonography II	4	The student will be presented with the identification of and interpretation of anatomy and pathology on sonographic exams as it relates to the obstetric and gynecologic patient. (Sp). Prerequisite: Minimum 2.5 in IDMS 202. Co-Requisite Course(s): IDMS 245 and IDMS 265 and IDMS 281.

COURSE	TITLE	CREDIT HOURS	TEXT
IDMS270	Sonographic Positioning I	2	Sonography students continue to learn scanning and sonographic positioning as well as imaging techniques. Normal anatomy of the abdomen including liver, biliary tree, kidneys, spleen, and pancreas will be explored. The great vessels will be introduced including the aorta, celiac axis, superior mesenteric artery, inferior vena cava and related arteries. (Su). Prerequisite: Admission to Diagnostic Medical Sonography Program and Reading Level 5 and Writing Level 6. Co-Requisite Course(s): IDMS 169 and IDMS 200.
IDMS271	Sonographic Positioning II	1	Sonography students continue to practice sonographic positioning and scanning techniques. Normal and abnormal anatomy of the abdomen including liver, biliary tree, aorta, kidney, spleen, transabdominal pelvis, thyroid, musculoskeletal and gravid uterus will be explored. (F). Prerequisite: Minimum 2.5 in IDMS 270. Co-Requisite Course(s): IDMS 201 and IDMS 202 and IDMS 234 and IDMS 280.
IDMS280	Clinical Experience I	6	First course in a three-semester sequence of clinical application in diagnostic medical sonography. Clinical experience is provided under the direct supervision of an ARDMS Registered Sonographer. Clinical competencies will be given corresponding to completed didactic work. Performance standards are used to evaluate the student's progress. (F). Prerequisite: Minimum 2.5 in (IDMS 169 and IDMS 200 and IDMS 270). Co-Requisite Course(s): IDMS 201 and IDMS 202 and IDMS 234 and IDMS 271.
IDMS281	Clinical Experience II	7	Building on material presented in IDMS280, this is the second course in a three-semester sequence in diagnostic medical sonography. Clinical experience is provided under the direct supervision of an ARDMS Registered Sonographer. Clinical competencies will be given corresponding to completed didactic work. Performance standards are used to evaluate the student's progress. (Sp). Prerequisite: Minimum 2.5 in IDMS 280. Co-Requisite Course(s): IDMS 245 and IDMS 265 and IDMS 266.
IDMS282	Clinical Experience III	8	Based on material presented in IDMS281, this is the last course in a three-semester sequence of clinical application in diagnostic medical sonography. Clinical experience is provided under the direct supervision of an ARDMS Registered Sonographer. Clinical competencies will be given corresponding to completed didactic work. Performance standards are used to evaluate the student's progress. (Su). Prerequisite: Minimum 2.5 in (IDMS 234 and IDMS 245 and IDMS 265 and IDMS 266).
IDMS285	Sonographic Registry Prep	3	Students will be presented with advanced teaching in cross-sectional anatomy and interpretation of pathology on sonographic exams as it relates to the abdomen, small parts, obstetrics, gynecology, sonographic physics, and limited vascular systems. This course is intended to provide final preparation for the American Registry of Diagnostic Medical Sonographers (ARDMS) board registry examination. (F). Prerequisite: Minimum 2.5 in (IDMS 245 and IDMS 265 and IDMS 266 and IDMS 281) or Approved DMS Graduate.
IDMS295	DMS Special Topics	.25 to 8	This course offers students the opportunity to learn new diagnostic medical sonography career skills and knowledge. Specific up-to-date content will vary with each topic presented and will be related to diagnostic medical sonography careers. (F,Sp,Su). Prerequisite: Determined by Section.
INSU265	Principles Risk and Insurance	3	At the completion of this course, the student will have a working knowledge of the theory of risk, insurance terminology, legal insurance contracts, and use of risk management. (Sp). Prerequisite: None.
IRXT100	Intro to Imaging/Patient Care	4	This course is a survey of the role of the radiographer in the health care industry, exploring the historical perspective of x-ray, certification, licensure, and continuing education requirements. Principles of basic patient care are covered including: aseptic techniques, infection control, vital signs, medical emergencies, venipuncture, and intravenous medication administration. Clinical observations at a college affiliate site and laboratory activities are included. (F). Prerequisite: Admission to Radiologic Technology Program.
IRXT111	Radiographic Positioning I	5	Student radiographers are introduced to radiographic positioning of the upper and lower extremity, chest, abdomen, bony thorax, pelvis, and spine. Associated topographic, skeletal, chest, and abdominal anatomy is studied. A laboratory experience is provided to evaluate the student skills in performing each position/projection. (F). Prerequisite: Admission to Radiologic Technology Program.
IRXT112	Radiographic Positioning II	5	A continued study of routine radiographic positioning with the addition of fluoroscopic procedures. Included are studies of the skull, G.I. tract, G.U. tract, myelography, and bronchography. In addition, various contrast media are studied. Laboratory experiences are provided to evaluate student skills in performing selected position/projections. (Sp). Prerequisite: Minimum 2.5 in IRXT 111.

COURSE	TITLE	CREDIT HOURS	TEXT
IRXT114	Cross-Sectional Anatomy	3	Provides an overview of transverse, coronal, and sagittal sectional anatomy of the human body. Special emphasis is placed on a study of the head and brain, thorax, abdomen and pelvis. The shoulder, elbow, hip and knee are also examined. Correlations between cadaver cross-sections, CTs, MRIs and radiographs are explored. (F). Prerequisite: Minimum 2.5 in IRXT 112.
IRXT121	Radiographic Exposure I	3	The formation and the analysis of the radiographic image is the focus of this class. While film/screen (analog) technologies are presented, correlations with digital technologies are included throughout. Photographic and geometric variables are related to radiographic factors and their effect on image formation. Finally, a study of the history of radiology, basics of radiation formation, and anatomy of the X-ray tube are discussed. (F). Prerequisite: Admission to Radiologic Technology Program.
IRXT122	Radiographic Exposure II	3	Various beam modifying devices are presented and their relation to formation of a radiographic image is studied. The theory of image formation is included. Dark room procedures and quality control, both radiographic and photographic, will also be explored. Finally, a study of digital imaging, digital image manipulation, and radiographic information systems complete topics included. (Sp). Prerequisite: Minimum 2.5 in IRXT 121.
IRXT123	Radiographic Independent Study	1 to 3	Provides selection of content from the Radiologic Technology curriculum to update or enhance current knowledge and skill for returning students and health care professionals. Through evaluation of previous learning, examinations, self study, and scheduling into needed lectures and labs students are advanced placed or readmitted into the Radiologic Technology Program. (F,Sp,Su). Prerequisite: Department Approval.
IRXT131	Radiologic Physics	3	Basic physical principles, measurement, structure of matter, electrostatics and magnetism, are related to the radiologic process. A study of elementary electricity and the operation of the x-ray circuit are presented. Finally, advanced topics regarding the formation of radiation and care of the X-ray tube are studied. (F). Prerequisite: Minimum 2.5 in IRXT 122.
IRXT132	Radiobiology and Protection	2	This course focuses on the rationale for good radiation hygiene and methods used to protect the patient and technologist from radiation exposure. Current theories and events regarding the physiological effects of ionizing radiation are also explored. (Sp). Prerequisite: Minimum 2.5 in IRXT 122.
IRXT200	Intro to Radiologic Pathology	2	Emphasizes how disease processes are diagnosed radiographically and the relationship of the radiographic appearance of the disease to its anatomic, physiologic, and pathologic characteristics. The etiology, treatment, and resolution of each disease is discussed with an attempt to relate more recent advances in these areas. (Sp). Prerequisite: None.
IRXT202	Clinical Practice I	4	This course is first in a two-semester sequence of clinical application in radiography. The course is programmed with specific performance activities. Credit is arranged for each individual semester with a ratio of one credit hour to four clinical clock hours. (Sp). Prerequisite: Minimum 2.5 in IRXT 111.
IRXT204	Clinical Practice II-S	5	This is the second course in a two-semester sequence of clinical applications in radiography. The course is programmed with specific performance activities. Credit is arranged for each individual term with a ratio of one credit hour to four clinical clock hours. (Su). Prerequisite: Minimum 2.5 in IRXT 202.
IRXT214	Comprehensive Experience I	6	First in a two-semester sequence of clinical application in radiography. Clinical experience is provided under the direct supervision of an ARRT Registered Technologist. Clinical competencies will be given corresponding to completed didactic work. Performance standards are used to evaluate the student's progress. (F). Prerequisite: Minimum 2.5 in IRXT 204.
IRXT215	Comprehensive Experience II	6	Second in a two-semester sequence of clinical application in radiography. Clinical experience is provided under the direct supervision of an ARRT Registered Technologist. Clinical competencies will be given corresponding to completed didactic work. Performance standards are used to evaluate the student's progress. (Sp). Prerequisite: Minimum 2.5 in IRXT 214.
IRXT270	Computed Tomography: CT Basics	1	This course presents the essential content needed to begin a career in computed tomography (CT). Colorful images and easy to understand animations will be used throughout this 11 module self-paced course. (F,Sp,Su). Prerequisites: Graduate of a Radiologic Technology Program with board eligibility or an ARRT Registered/Certified Technologist and Department Approval.

COURSE	TITLE	CREDIT HOURS	TEXT
IRXT295	Radiologic Tech Special Topics	.25 to 8	This course offers students the opportunity to learn new radiologic technology career skills and knowledge. Specific up-to-date content will vary with each topic presented and will be related to radiologic technology careers. (F,Sp,Su). Prerequisite: Determined by Section.
ISCI110	Science Discovery: A Process	4	Emphasizes reducing anxiety and improving reasoning skills necessary for participation in science courses. Methods to identify and reduce anxiety associated with science topics are presented. Science reasoning skills will be inventoried, including observation, experimental techniques, critical thinking, and communication. (F,Sp,Su). Prerequisite: Reading level 3 and Writing level 2 and Math Level 3.
ISCI121	Integrated Sci for Education I	4	The first of two general science courses focusing on the fundamental behavior of matter and energy using a historical and environmental context. Science processes, methods, and reasoning skills are emphasized throughout. Recommended for education majors. (F,Sp). Prerequisite: Reading Level 5 and Writing Level 6 and Math Level 4. Course Note: ISCI 121 is designed for elementary education majors.
ISCI122	Integrate Sci for Education II	4	The second of two general science courses focusing on the biological and ecological nature of our universe, using a historical and integrative approach. Science processes, methods, and reasoning skills are emphasized throughout. Recommended for education majors. (F,Sp). Prerequisite: Minimum 2.0 in ISCI121 and Reading Level 5 and Writing Level 6 and Math Level 4.
ISCI131	Integrated Science - Physical	4	A general education course designed to provide students with a basic understanding of the methods and applications of science. Topics include basic chemistry, thermodynamics, the hydrologic cycle, earth science, climate, and weather. Critical thinking and problem-solving skills are applied to environmental issues. Laboratory activities illustrate and amplify lecture topics. (F,Sp). Prerequisite: Reading Level 5 and Writing Level 6 and Math Level 4.
ISCI275	Advanced Technology Workplace	4	This course will introduce students to vital concepts encountered by employees working in advanced technology regulated environments within the emerging global economy. This covers four main areas of working in an advanced technology environment: process control, safety and security, legal and ethical Issues, and essential math and science skills. The lab work emphasizes basic techniques and concepts discussed during lecture. (F). Prerequisite: Reading Level 5 and Writing Level 6 and (Math Level 6 or MATH 112 concurrently). Recommended: A science laboratory course.
JAPN115	Conversational Japanese I	3	First course in conversational Japanese. Designed for people with little or no knowledge of Japanese who wish to acquire conversational skills. Students learn correct pronunciation, basic sentence structures, and practical vocabulary for everyday use and traveling. Selected features of Japanese culture and everyday life in Japan will be introduced. (F,Sp,Su). Prerequisite: None.
JAPN116	Conversational Japanese II	3	Second course in conversational Japanese. Designed for people with some prior knowledge of Japanese who wish to improve their conversational skills. Emphasis is practical vocabulary and essential grammar to converse in Japanese. Japanese culture will be introduced through multi-media presentations. (Sp). Prerequisite: None. Recommended: JAPN 115 or equivalent.
JAPN121	Elementary Japanese I	4	First course of a two-semester sequence in elementary Japanese. Students gain basic knowledge of communication skills through speaking, reading, writing, and listening comprehension. Everyday life and culture of Japan are discussed. Hiragana and Katakana syllabaries and 40 Kanji are introduced. (F,Sp). Prerequisite: Reading Level 5.
JAPN122	Elementary Japanese II	4	Second course of a two-semester sequence in elementary Japanese. Students receive more practice in Japanese for practical communication. Develops speaking, reading, writing, and listening skills. Previously acquired knowledge and skills are refined and ability to communicate in Japanese is increased. Additional 100 Kanji will be introduced. Class is taught mostly in Japanese. (Sp). Prerequisite: Minimum 1.5 in JAPN 121 or equivalent.
JAPN201	Intermediate Japanese I	4	First course of a two-semester sequence in intermediate Japanese. Includes introduction of more advanced grammar, vocabulary building, composition, group discussions, and more information on Japanese culture and everyday life. Additional 150 Kanji will be introduced. (F). Prerequisite: Minimum 1.5 in JAPN 122 or equivalent.
JAPN202	Intermediate Japanese II	4	Continuation of JAPN201. Includes more advanced grammar, intensive vocabulary building, writing composition, reading contemporary materials, discussions, and student presentations of Japanese language or culture. Additional 150 Kanji will be introduced. Natural and practical communication will be emphasized. Class is taught in Japanese. (Sp). Prerequisite: Minimum 1.5 in JAPN 201 or equivalent.

COURSE	TITLE	CREDIT HOURS	TEXT
JRNL151	Newswriting and Reporting	3	Introduction to and practice in writing news stories. Students learn news terminology, style, objectivity, attribution, accuracy, and copy-editing skills. Basic news gathering and reporting tactics are presented and practiced. (F). Prerequisite: Minimum 2.0 in (WRIT 121 or WRIT 131). Recommended: Computer and/or keyboarding experience.
JRNL251	News Design and Layout	3	This course will equip students to do basic electronic design and layout for newspapers, newsletters, and brochures, among other print media. The news value of information will be the primary criterion for design choices, although fundamental aesthetics also will be covered. (Sp). Prerequisite: Minimum 2.0 in JRNL 151. Recommended: Computer and/or keyboarding experience.
JRNL254	Opinion Writing	3	A course in how to write effective editorials. Students analyze content, structure and style of editorial models, learn methods of finding subjects, learn methods of research, and write editorials and articles on important issues. (Sp). Prerequisite: Minimum 2.0 in (JRNL 151 or WRIT 121 or WRIT 131). Recommended: Computer and/or keyboarding experience.
LABR200	Intro to Labor Relations	3	This course surveys both historical and legal frameworks of the labor movement. Major labor laws, causes and goals of the labor movement, and union structure and behavior will be discussed. Students will explore both labor and management approaches to solving employment disputes. (F,Sp). Prerequisite: Reading Level 4 and Writing Level 4.
LABR204	Employment Law for Managers	3	This course provides an introduction and overview to the principles and application of laws affecting the workplace, not including traditional labor relations law. Areas of law covered include discrimination, wage-hour, unemployment benefits, personnel records, and common law issues relating to discharge and other matters. (F,Sp). Prerequisite: Reading Level 5 and Writing Level 6.
LBST290	Seminar Special Topics	1 to 4	This course provides students the opportunity to acquire knowledge and skills in various Liberal Arts topics. Topics may include a Study Abroad experience in a particular discipline, multidisciplinary or honors seminars, or subjects of general interest to the community and may vary with each semester and section offering. (F,Sp,Su). Prerequisite: Determined by Section.
LEAD110	Leadership Development I	2	Develop leadership skills through study, observation, and application. Assists students in increasing their understanding of themselves, and the theories and techniques of leadership. Specific skills include: understanding your personal philosophy, visioning, logic and creativity in decision making, servant leadership, ethics, building trust, empowering others, resolving conflict, leader as change-makers, leading with goals, time management, and situational leadership. (F). Prerequisite: Department Approval.
LEAD111	Leadership Development II	2	Provides an opportunity to further develop and apply leadership skills introduced in the previous course. Students will learn and apply skills related to conference planning, implementation and evaluation. Students will serve on Lansing Community College committees and volunteer in community organizations. (Sp). Prerequisite: Minimum 2.0 in LEAD 110.
LEAD210	Leadership Practicum I	2	This course provides an opportunity to apply leadership skills in on-campus and community service settings. Emphasis is placed on serving on campus committees; as Student Ambassadors involving new student orientation, on and off campus recruitment and other Enrollment Services activities and college functions. Community services is also required. (F). Prerequisite: Minimum 2.0 in LEAD 110 and LEAD 111.
LEAD211	Leadership Practicum II	2	This course provides further opportunity for students to apply leadership skills. Emphasis is placed on participation in the Student Recognition Banquet, serving on campus committees; as Student Ambassadors, on and of campus recruitment and other Enrollment Services activities and college functions. Community service is also required.(Sp). Prerequisite: Minimum 2.0 in LEAD 210.
LEGL110	Editing Legal Documents	2	This course is an in-depth exposure to common legal documents and vocabulary students will encounter in any law office. Students will learn to read, analyze, proofread and edit legal documents applying sound legal and English fundamentals. Standard reference materials and their importance with respect to legal documents will be emphasized. (F, Sp). Prerequisite: Reading Level 5 and Writing Level 6 Recommended: Keyboarding Experience Course Note: LEGL110 is the first course in the Paralegal Program. Students who enroll in the course are encouraged to attend one of the following ORIENTATION sessions: (1) August 20, 2013 at 12:00 pm at West Campus in M127. Call (517) 483-1570 or (517) 483-1503 to sign up or make alternate arrangements if you cannot attend. Students can also visit the website at https://www.lcc.edu/academics/public-service-careers/legal-studies/ .

COURSE	TITLE	CREDIT HOURS	TEXT
LEGL115	Paralegal Career/Ethics	2	Introduction to the paralegal's role in the legal system, including essential skills used in the litigation process and law practice. Introduces student to legal terminology, legal analysis, procedural, and substantive law. Surveys paralegal employment and regulation. 2.0 minimum required to continue program. (F,Sp,Su). Prerequisite: Reading Level 5 and Writing Level 6.
LEGL120	Legal Research I	3	Introduces research procedures and resources for finding federal and Michigan law, using digests, encyclopedias, reporters, statutes, court rules, treatises, administrative publications, citators, etc. Students complete research assignments utilizing the publications, and the assignments must be completed using the Michigan Uniform System of Citation. Some classes may be at off-campus libraries. (F,Sp). Prerequisite: Minimum 2.0 in (LEGL110 and LEGL 115) and Reading Level 5 and Writing Level 6. Recommended: LEGL 215.
LEGL121	Legal Writing I	3	Students will learn to analyze court opinions and apply them to particular fact situations. This skill will then be used to write summaries of court opinions and documents such as legal memoranda and appellate briefs. Learning methods include reading assignments, class discussion, lecture, and writing assignments of increasing difficulty. (F,Sp). Prerequisite: Minimum 2.0 in (LEGL 110 and LEGL 115 and WRIT 122) and (minimum 2.0 in LEGL 120 or concurrently) and Reading Level 5 and Writing Level 6. Recommended: LEGL 215.
LEGL150	Legal Issues: Start Small Busn	2	This course will introduce the student to legal aspects of starting and operating a small business. Topics will include selecting the appropriate legal structure for setting up a business, complying with employment law, protecting intellectual property, avoiding legal disputes, and other legal aspects of purchasing and operating a business. (F,Sp). Prerequisite: Reading Level 5 and Writing Level 4.
LEGL160	Critical Thinking in Law	3	This course strongly emphasizes the "learn by doing" approach, specifically by utilizing group dynamics. The panorama of thinking skills, particularly those relevant in law and criminal justice, will be examined and practiced. Innovative evaluation skills, both personal and group, are a regular part of each session. (F,Sp,Su). Prerequisite: None.
LEGL210	Litigation Procedures	4	Provides in-depth study of pre-trial, trial, and post-trial practice and procedure. Emphasizes Michigan and federal rules of court. Detailed study of drafting pleadings, discovery procedures, and case preparation for trial and appeal. Also covers evidentiary rules as they relate to trial practice and preparation. (F,Sp,Su). Prerequisite: Minimum 2.0 in (LEGL 110 and LEGL 115) and Reading Level 5 and Writing Level 6. Recommended: LEGL 215.
LEGL211	Tort Law	2	Covers principles of negligence, intentional torts, and strict liability. Emphasizes the role of the paralegal in dealing with these areas of law in actual practice situations. (F,Sp,Su). Prerequisite: Minimum 2.0 in (LEGL 110 and LEGL 115) and Reading Level 5 and Writing Level 6. Recommended: LEGL 215.
LEGL215	Busn Law I, Basic Principles	3	Introduction to the legal system, its purpose, and the fundamental principles of various areas of the law. Course content includes sources of law, court procedures, contracts, torts, crimes, constitutional rights, no-fault auto insurance, landlord-tenant law, and bailments. Taught in traditional classroom style or online. (F,Sp,Su). Prerequisite: None.
LEGL216	Busn Law II, Commercial Law	3	An in-depth analysis of the Uniform Commercial Code allows students to explore the law of sales, commercial paper, secured transactions, banking, insurance, and debtor-creditor rights. Taught in traditional classroom style or online. (F,Sp,Su). Prerequisite: Minimum 1.0 in LEGL 215.
LEGL217	Busn Law III, Busn Organiza	3	Introduces basic business organizations, including agency law, partnerships, sole proprietorships, and corporations. Additionally, the course will delve into government regulation of business, real estate, wills, trusts, and estates. Taught in traditional classroom style or online. (F,Sp). Prerequisite: Minimum 1.0 in LEGL 215.
LEGL218	Litigation Specialties	3	Covers several specialty areas of law, for example personal injury, professional malpractice, products liability, workers' compensation, and no-fault auto insurance. Emphasizes role of paralegal in these practice areas, including drafting of legal instruments. (F). Prerequisite: Minimum 2.0 in (LEGL 211 and LEGL 215) and Reading Level 5 and Writing Level 6.
LEGL219	Adv Busn Law for Acct Majors	4	This self-paced course is intended for students majoring in accounting who have a goal of becoming a Certified Public Accountant (CPA). This course covers the law of sales; commercial paper; security devices; debtor-creditor relations; bankruptcy; insurance; agency; partnership; corporations; wills, trusts and estates; employment regulation; real property; and accountant's liability. This course is taught online. (F,Sp). Prerequisite: Minimum 1.0 in LEGL 215. Recommended: Accounting background.

COURSE	TITLE	CREDIT HOURS	TEXT
LEGL220	Intl Legal Issues/Organization	3	This class will introduce global issues and organizations from the legal perspective and related economic and ethical perspectives. Cases based on events from around the globe will be used to illustrate principles, structures, and perspectives of citizens from many countries. Students will examine how these topics impact their daily activities. (Sp). Prerequisite: Minimum 2.0 in LEGL 215.
LEGL221	Real Estate Transaction	3	Covers fundamental principles of real estate property law and introduces the student to common types of real estate transactions encountered by a paralegal in a typical real estate practice. Subject matter includes deeds, land contracts, mortgages, title insurance, environmental issues, forfeitures and foreclosures, and landlord-tenant relationships. (F). Prerequisite: Minimum 2.0 in (LEGL 110 and LEGL 115 and LEGL 215) and Reading Level 5 and Writing Level 6.
LEGL222	Probate Law and Procedure	3	Probate process will be addressed in detail, from commencement of proceedings through closing the estate of a decedent. Other topics will include wills, trusts, and related topics. Emphasis is on the part played by the paralegal in preparation of documents and other probate practice tasks. (Sp). Prerequisite: Minimum 2.0 in (LEGL 110 and LEGL 115 and LEGL 215) and Reading Level 5 and Writing Level 6.
LEGL223	Domestic Relations	3	Covers marriage, divorce, separation, annulment, paternity proceedings, custody, support, property division, and other areas of domestic relations law. Emphasis will be on the paralegal's role in dealing with clients and applying appropriate statutes, case law, and court rules as part of a domestic law practice. (Sp). Prerequisite: Minimum 2.0 in (LEGL 110 and LEGL 115 and LEGL 215) and Reading Level 5 and Writing Level 6.
LEGL224	Administrative Law	3	The relationship of governmental administrative agencies to private citizens is explored by studying how law is created and enforced by such agencies at the state and federal levels. Paralegal students will focus on topics including rule making procedures, regulations, adjudication, licensing, and informal action. (F). Prerequisite: Minimum 2.0 in (LEGL 110 and LEGL 115 and LEGL 215) and Reading Level 5 and Writing Level 6.
LEGL225	Legal Research and Writing II	3	Reviews principles of legal research, analysis, and writing. Introduces student to computer-assisted legal research (e.g. Lexis or Westlaw). Student will draft legal memoranda and a trial court brief based on extensive research assignments in Michigan publications. (F,Sp). Prerequisite: Minimum 2.0 in (LEGL 120 and LEGL 121) and Reading Level 5 and Writing Level 6.
LEGL226	Legal Interview and Investig	3	Interviewing and investigation methods including information gathering, analysis, and effective communication. Emphasis will be placed on the role of the paralegal with numerous practical exercises. (Sp). Prerequisite: Minimum 2.0 in (LEGL 110 and LEGL 115 and LEGL 215) and Reading Level 5 and Writing Level 6.
LEGL227	Bankruptcy and Collections	3	Explores federal bankruptcy law and procedure with emphasis on the paralegal's role in collecting information, interviewing clients, and preparing documents. Topics include a comparison of selected chapters within the bankruptcy code, exemptions, preferences, petitions, schedules, and the part played by the bankruptcy trustee. (Su). Prerequisite: Minimum 2.0 in (LEGL 110 and LEGL 115 and LEGL 215) and Reading Level 5 and Writing Level 6.
LEGL228	Computer Appl for the Law Ofc	3	This course focuses on computer technology as it is applied within the law office, including the use of computers to perform paralegal functions in litigation support, legal research using tools including Lexis or Westlaw, communication and case management applications, such as calendar and docket control. (F,Sp,Su). Prerequisite: Minimum 2.0 in ((CITA 119 or CITA 219 or Post Bachelor Student) and Reading Level 5 and Writing Level 6. Recommended: Windows and keyboarding experience.
LEGL229	Immigration Law	3	This course covers fundamental principles and practical application of Immigration Law with emphasis on the paralegal's role. Topics will include sources, history, and future of immigration law, visas, citizenship, refugee/asylum, removal and defenses, impact on other areas of law, and working with clients from cultures around the world. (F). Prerequisite: Minimum 2.0 in (LEGL 110 and LEGL 115 and LEGL 215) and Reading Level 5 and Writing Level 6.
LEGL230	Paralegal Career Portfolio	1	Students will review legal documents and writing samples they have drafted throughout the paralegal program, and will revise selected documents. They will refine or prepare a cover letter, resume, and other application materials. Students will then assemble these materials in a career portfolio suitable for presentation at a job interview. Interviewing and job search skills will also be emphasized. (F,Sp). Prerequisite: Minimum 2.0 in LEGL 225 or concurrently and Reading Level 5 and Writing Level 6.

COURSE	TITLE	CREDIT HOURS	TEXT
LEGL251	Paralegal Independent Study	1 to 3	This course provides a study of specific current or classic legal topics and issues that affect legal assistants/paralegals. Students, with the assistance of the instructor, select a topic, then develop and execute a plan to independently examine the topic by reviewing written materials and/or interviewing people in the field. (F,Sp,Su). Prerequisite: Department Approval. Course Note: Department approval to enroll in these CRNs can be requested by calling the Paralegal/Legal Assistant Program office at 517-483-5228.
LEGL280	Paralegal Internship	3	Students will experience the paralegal career by working in a supervised capacity. Placements include private law firms, governmental law offices, courts, corporations, and other law-related settings. Requirements include at least 160 hours in the workplace, weekly reports, periodic meetings, and performance evaluations by on-site supervisor. (F,Sp,Su). Prerequisite: Department Approval. Course Note: Department Approval requires a completed application submitted to the Public Service Careers Office. Students must bring their driver's license with the application. Worksite placements must be discussed and assigned by instructor. Students will be notified by phone upon acceptance into the course of the class meeting time arranged by the instructor.
LING230	Introduction to Linguistics	3	Examines human language from the perspective of contemporary American linguistics: generative syntax, phonology, and morphology. Special attention to the structure of English. Considers regional and social variation, and implications for teachers of language skills. (F,Sp). Prerequisite: Reading Level 5.
MASG110	Massage for Non-Majors	1	This course provides instruction in basic Swedish massage therapy skills for non-majors. Along with a brief introduction to the history and principles of massage therapy, the student will learn to perform a professionally draped, full-body Swedish massage on a partner for health enhancement. (F,Sp,Su). Prerequisite: Must be 18 years of age.
MASG131	Therapeutic Massage I	4.5	This course provides information on the theory and practice of therapeutic massage. Swedish massage techniques with variations are developed into a sequence for a full body therapeutic massage for healthy adults. Topics include basic anatomy and physiology of major muscle groups and bones, massage benefits and contraindications, professional ethics, body mechanics, and self-care. (F,Sp). Prerequisite: Reading Level 5 and Writing Level 6 and HS Diploma or Equivalent and Department Approval. Restriction: Therapeutic Massage Majors.
MASG132	Body Systems for Massage	3	An introductory course in human anatomy and physiology that combines lecture and laboratory experiences to provide a basic understanding of the structure and function of human body systems. It is designed for students enrolled in the Therapeutic Massage Program to prepare for licensing exams and professional practice. (F,Sp),. Prerequisite: Reading Level 5 and Writing Level 6. Restriction: Therapeutic Massage Majors.
MASG137	Medical Elements of Massage	2	This course will introduce the student to basic medical vocabulary related to the body system. Basic pharmacology will be presented with the classifications and names of common medications, as well as massage considerations for common medications. (F,Sp). Prerequisite: Reading Level 5 and Writing Level 6. Restriction: Therapeutic Massage Majors.
MASG138	Fundamentals/Clinical Massage	1	This course prepares students to interact with massage clients as well as with allied health professionals. Active listening, rapport, empathy, and feedback skills used in a therapeutic massage environment will be taught. Students will develop an understanding of the physiological and emotional effects of touch and will learn protocol for establishing professional boundaries. (F,Su). Prerequisite: Reading Level 5 and Writing Level 6. Restriction: Therapeutic Massage Majors.
MASG139	Medical Conditions in Massage	2	This course will introduce students to the pathology of body systems and will address the positive or negative impact that massage therapy may have on those conditions. Students will learn to apply this knowledge to decision-making skills for client care. (F,Sp). Prerequisite: Reading Level 5 and Writing Level 6. Restriction: Therapeutic Massage Majors.
MASG141	Massage Clinic I	1.5	Students will progressively utilize the knowledge, skills, and practical experience attained throughout the Therapeutic Massage Program in a clinical setting and in event massage. The student will be engaged in weekly scheduled massage sessions with clients in this first of three clinical courses. (Sp,Su). Prerequisite for New Cohort Program: Minimum 2.5 in all previous semester MASG courses. Restriction: Therapeutic Massage Majors. Prerequisite for Non-cohort Program: Minimum 2.5 in (MASG 136 and BIOL 145) and (Minimum 2.5 in (MASG 138 and MASG 151A and MASG 151B) or concurrently).
MASG150	Therapeutic Masg Special Topic	.25 to 4	This course offers students the opportunity to learn new skills and knowledge related to therapeutic massage. Specific up-to-date course content will vary with each offering and will be related to therapeutic massage. (F,Sp,Su). Prerequisite: Determined by Section.

COURSE	TITLE	CREDIT HOURS	TEXT
MASG151	Applied Massage Techniques	4	This course will introduce the student to various massage therapy techniques and how these techniques relate to individuals with specific needs. The focus will be on designing and implementing appropriate massage therapy techniques for chair massage, infants, pregnant women, athletes, chronic and terminally ill individuals, the elderly, and clients with psychological issues. (). Prerequisite for New Cohort Program: Minimum 2.5 in all previous semester MASG courses. Restriction: Therapeutic Massage Majors.Prerequisite for Non-cohort Program: Minimum 2.5 in MASG 131.
MASG151A	Chair Massage	1	This course will introduce the student to chair massage techniques. Student will learn palpation skills and identification of bony landmarks and muscles. Use of body mechanics to reduce strain on the therapist is emphasized. (Sp,Su). Prerequisite for New Cohort Program: Minimum 2.5 in all previous semester MASG courses. Restriction: Therapeutic Massage Majors.Prerequisite for Non-cohort Program: Minimum 2.5 in MASG 131.
MASG151B	Sports Massage	1	This course prepares the student to perform massage prior to and following an athletic event or training session. Thermal injuries, the use of ice and heat to supplement the healing effects of massage, cross fiber friction techniques, indications, contraindications and procedures are covered. (Sp,Su). Prerequisite for New Cohort Program: Minimum 2.5 in all previous semester MASG courses. Restriction: Therapeutic Massage Majors.Prerequisite for Non-cohort Program: Minimum 2.5 in MASG 131.
MASG151C	Maternal/Infant Massage	1	This course teaches massage techniques specifically beneficial to women during pregnancy and post-partum recovery. Massage techniques beneficial to infants and young children will also be introduced. (Sp,Su). Prerequisite for New Cohort Program: Minimum 2.5 in all previous semester MASG courses. Restriction: Therapeutic Massage Majors.Prerequisite for Non-cohort Program: Minimum 2.5 in MASG 131.
MASG151D	Special Populations	1	Students learn to adapt massage techniques to the needs of special populations. The focus will be on learning information needed for designing and implementing appropriate massage therapy sessions for the chronic and terminally ill, the elderly, and clients with psychological and emotional issues. (Sp,Su). Prerequisite for New Cohort Program: Minimum 2.5 in all previous semester MASG courses. Restriction: Therapeutic Massage Majors.Prerequisite for Non-cohort Program: Minimum 2.5 in MASG 136.
MASG170	Massage Directed/Indep Study	.25 to 4	This course includes special research, projects, or directed study in therapeutic massage. Massage students may enroll to update or enhance knowledge, skills, and competencies. Advanced students may explore topics related to, but not included in the curriculum. A learning contract specifying objectives, activities, outcomes, and grading methods is required. (F,Sp,Su). Prerequisite: None.
MASG231	Therapeutic Massage II	4.5	This course will introduce the student to clinical massage techniques to treat conditions of the upper body. Students will learn anatomy, physiology, and kinesiology of specific muscles of the head, neck, upper extremities, and torso followed by clinical massage techniques and stretches to treat these areas. (Sp,Su). Prerequisite for New Cohort Program: Minimum 2.5 in all previous semester MASG courses. Restriction: Therapeutic Massage Majors.Prerequisite for Non-cohort Program: Minimum 2.5 in MASG 131.
MASG232	Therapeutic Massage III	4.5	This course will introduce the student to clinical massage techniques to treat conditions of the lower body. Students will learn anatomy, physiology and kinesiology of specific muscles of the torso, hips and lower extremities followed by clinical massage techniques and stretches to treat these areas. (Sp). Prerequisite for New Cohort Program: Minimum 2.5 in all previous semester MASG courses. Restriction: Therapeutic Massage Majors.Prerequisite for Non-cohort Program: Minimum 2.5 in MASG 231.
MASG235	National Certification Prep	1	This course is designed to prepare massage therapy students or practicing massage therapists to study for national massage therapy exams. It will review all areas of the national exam content and cover test taking strategies. (Sp,Su). Prerequisite: Valid CPR certification through the end of class from American Heart Association/Health Care Provider or American Red Cross/Professional Rescuer or (Passing grade in NCHE 102 or NCHE 103 within 2 years).Additional Prerequisite for New Cohort Program: Minimum 2.5 in all previous semester MASG courses. Restriction: Therapeutic Massage Majors.
MASG241	Massage Clinic II	1.5	Students will progressively utilize the knowledge, skills, and practical experience attained throughout the Therapeutic Massage Program in a clinical setting and in an event massage. The student will be engaged in weekly scheduled massage sessions with clients in this second of three clinical courses. (F,Sp). Prerequisite for New Cohort Program: Minimum 2.5 in all previous semester MASG courses. Restriction: Therapeutic Massage Majors.Prerequisite for Non-cohort Program: (Minimum 2.5 in MASG 141 and MASG 231) or concurrently.

COURSE	TITLE	CREDIT HOURS	TEXT
MASG242	Massage Clinic III	1.5	Students will progressively utilize the knowledge, skills, and practical experience attained throughout the Therapeutic Massage Program in a clinical setting and in event massage. The student will be engaged in weekly scheduled massage sessions with clients in this last of three clinical courses. (Sp,Su). Prerequisite for New Cohort Program: Minimum 2.5 in all previous semester MASG courses. Restriction: Therapeutic Massage Majors.Prerequisite for Non-cohort Program: Minimum 2.5 in MASG 241 and (Minimum 2.5 in MASG 232 or concurrently).
MASG251	Alternative Massage Techniques	4	Students will be introduced to bodywork modalities that include reflexology, polarity, Shiatsu, and positional release through lecture, demonstration, and practice time. Topics will include how to locate specialized training programs in each modality and how to incorporate these techniques into a massage session. (). Prerequisite for New Cohort Program: Minimum 2.5 in all previous semester MASG courses. Restriction: Therapeutic Massage Majors.Prerequisite for Non-cohort Program: Minimum 2.5 in MASG 131.
MASG251A	Polarity Therapy	1	Polarity therapy balances the human energy field. Students will learn polarity energetic theory and a basic flow of hands-on polarity energy balancing techniques. Topics will also include how to locate specialized training programs and how to blend polarity techniques into a massage session. (Su). Prerequisite for New Cohort Program: Minimum 2.5 in MASG 131. Restriction: Therapeutic Massage Majors.Prerequisite for Non-cohort Program: Minimum 2.5 in MASG 131.
MASG251B	Reflexology	1	Reflexology is the science that teaches the principle that there are reflexes in the feet and hands that correspond to every organ, gland, and part of the body. This course teaches the student to access reflex points in the foot to allow an improvement in circulation, nerve and blood supply. (Sp,Su). Prerequisite for New Cohort Program: Minimum 2.5 in MASG 131. Restriction: Therapeutic Massage Majors.Prerequisite for Non-cohort Program: Minimum 2.5 in MASG 131.
MASG251C	Asian Body Therapy	1	The purpose of ABT is to increase circulation and restore the balance of energy in the body. Students will apply digital pressure to points on the energy pathways (tsubos) to help the natural recuperative powers of the body, disperse toxins, relax muscles and balance energy. (Sp,Su). Prerequisite for New Cohort Program: Minimum 2.5 in all previous semester MASG courses. Restriction: Therapeutic Massage Majors.Prerequisite for Non-cohort Program: Minimum 2.5 in MASG 131.
MASG251D	Positional Release	1	Positional Release is a therapeutic massage technique for decreasing or eliminating muscle hypertonicity and its resultant neuromuscular discomfort. This technique is painless for the client and allows the massage therapist to use deeper pressure techniques in the previously hypersensitive muscle. (Sp,Su). Prerequisite for New Cohort Program: Minimum 2.5 in all previous semester MASG courses. Restriction: Therapeutic Massage Majors.Prerequisite for Non-cohort Program: Minimum 2.5 in MASG 232 or concurrently.
MASG254	Busn App Therapeutic Massage	2	This course introduces students to aspects of business and marketing in the field of massage and body work. Emphasis is placed on development of a professional and personal business sense using planning and persistence, client-practitioner relationships, research, marketing strategy, goal-setting, motivation, and professional legalities. (F,Su). Prerequisite for New Cohort Program: Minimum 2.5 in all previous semester MASG courses. Restriction: Therapeutic Massage Majors.Prerequisite for Non-cohort Program: Minimum 2.5 in MASG 131.
MASG256	Clinical Assess Therap Massage	1	This course introduces the student to a system of dealing effectively with the client who presents a physical complaint. The principles and methods practiced by effective clinicians are identified and explained so that the student can use the problem oriented approach to analyze neuromuscular problems and complaints. (Sp). Prerequisite for New Cohort Program: Minimum 2.5 in all previous semester MASG courses. Restriction: Therapeutic Massage Majors.Prerequisite for Non-cohort Program: Minimum 2.5 in (MASG 232 and MASG 242) or concurrently.
MATH001	Math Minus Anxiety Workshop	0.5	This workshop addresses anxiety as it relates to mathematics. The sessions will focus on causes and management of math anxiety. Some problem solving and study skills will be included. Students at any math level may enroll. Course will have 1 4-hour session followed by 2 2-hour sessions. (F,Sp). Prerequisite: Department Approval and must be concurrently enrolled in another MATH course.
MATH045	Math Refresher	1	Intensive one-week refresher course for students who lack the mathematics level to enroll in MATH 050. Content will include whole number and rational number concepts and operations, problem-solving strategies, and mathematics test-taking and study skills. (F,Sp). Prerequisite: Reading Level 3 and Writing Level 2 and Department Approval.

COURSE	TITLE	CREDIT HOURS	TEXT
MATH050	PreAlgebra	4	<p>This course reviews mathematical operations involving fractions and decimals. Topics include percents, ratios, proportions, U.S. and metric measurements, integers, statistical graphs, Pythagorean Theorem, perimeter, area, and volume. It also introduces algebraic concepts using expressions and equations. Problem solving, estimation, and reasoning skills are taught. The calculator and real-life applications are integrated throughout the course. (F,Sp,Su).</p> <p>Prerequisite: Math Level 3 and Reading Level 3 and Writing Level 2.</p> <p>Course Note: MATH 050 is usually offered in 4 different delivery methods: Online, Online/Hybrid, Lecture, Learning Lab. For an explanation of the Learning Lab delivery method, refer to https://www.lcc.edu/academics/science-and-mathematics/mathematics/ and select What is a Learning Lab?, or call (517) 483-1073 and press 4. The course fee provides all enrolled students online access to a full electronic textbook (e-text), online course homework system, and additional online resources. These course materials will be available to students the first day of class. Students are encouraged to speak with their instructor BEFORE purchasing any optional course materials. The TI-30XIIS is required for course work. A graphing calculator from the TI-83/84/Nspire family would also be acceptable.</p>
MATH105	Mathematical Literacy	4	<p>Provides the skills needed for selected Core Math courses. Topics include numeracy, mathematical thinking & investigations, proportional reasoning, basic algebraic concepts, functions (linear & exponential), and basic statistical concepts. Graphing calculator required. Graphing calculator, spreadsheets and internet resources, as well as real-life applications are integrated throughout the course. (F, SP). Prerequisite: (Minimum 2.0 in MATH 050 or Math Level 4) and Reading Level 5 and Writing Level 2.</p>
MATH107	Introductory Algebra	4	<p>Graphing calculator required. Topics include problem solving, properties of real numbers and exponents, variable expressions, solving linear equations and inequalities, polynomial operations including factoring, graphing, solving systems of equations and inequalities, functions and relations. Graphing calculator, diverse, real-life applications and geometry are integrated throughout the course. (F,Sp,Su).</p> <p>Prerequisite: (Minimum 2.0 in MATH 050 or Math Level 4) and Reading Level 5 and Writing Level 2.</p> <p>Course Note: : MATH 107 is usually offered in 4 different delivery methods: Online, Online/Hybrid, Lecture, Learning Lab. For an explanation of the Learning Lab delivery method, refer to https://www.lcc.edu/academics/science-and-mathematics/mathematics/ and select What is a Learning Lab?, or call (517) 483-1073 and press 4. The course fee provides all enrolled students online access to a full electronic textbook (e-text), online course homework system, and additional online resources. These course materials will be available to students the first day of class. Students are encouraged to speak with their instructor BEFORE purchasing any optional course materials. A graphing calculator from the TI-83/84 family is required for course work.</p>
MATH112	Intermediate Algebra	4	<p>Graphing calculator required. This is an extension of beginning algebra with emphasis on graphing and diverse, real-life applications. Also emphasized are functions & relations, polynomial, rational, radical, and quadratic expressions and equations, rational exponents, and absolute value equations and inequalities with an introduction to complex numbers. (F,Sp,Su).</p> <p>Prerequisite: (Minimum 2.0 in MATH 107 within 2 years or Math Level 5 within 2 years) and Reading Level 5 and Writing Level 4.</p> <p>Course Note: MATH 112 is usually offered in 4 different delivery methods: Online, Online/Hybrid, Lecture, Learning Lab. For an explanation of the Learning Lab delivery method, refer to https://www.lcc.edu/academics/science-and-mathematics/mathematics/ and select What is a Learning Lab?, or call (517) 483-1073 and press 4. The course fee provides all enrolled students online access to a full electronic textbook (e-text), online course homework system, and additional online resources. These course materials will be available to students the first day of class. Students are encouraged to speak with their instructor BEFORE purchasing any optional course materials. A graphing calculator from the TI-83/84/Nspire family is required for course work .</p>
MATH114	Technical Math I	4	<p>Introductory applied algebra for students in technical programs, with brief introduction to trigonometry. Algebraic expressions, powers, roots, ratio and proportion, variation, linear and quadratic equations, evaluating and solving formulas, systems of equations, graphing, area, volume, Pythagorean Theorem, brief introduction to right triangle trigonometry. Emphasizes problem-solving for technical applications. (F,Sp,Su).</p> <p>Prerequisite: (Minimum 2.0 in MATH 050 within 2 years or Math Level 4 within 2 years) and Reading Level 4.</p> <p>Course Note: Technical career programs allow students with Math Level 5 and Reading Level 5 to enroll directly in MATH 115, even if MATH 114 is listed in the Requirements.</p>
MATH115	Technical Math II	4	<p>Applied geometry and trigonometry for students in technical programs. Congruence, similarity, polygons, circle geometry, trigonometry with right and oblique triangles (including laws of sines, cosines and cotangents), surface area, volume, coordinate systems, and introduction to vectors. Emphasizes problem-solving for technical applications. (F,Sp,Su).</p> <p>Prerequisite: (Minimum 2.0 in MATH 114 within 2 years or Math Level 5 within 2 years) and Reading Level 5.</p>
MATH117	Math for Business	4	<p>This course surveys math applications in business. Applications representing management, marketing, finance, accounting, and statistics are used. Analysis of situations in business and correct use of business theory is emphasized in addition to accuracy in math. (F,Sp).</p> <p>Prerequisite: (Minimum 2.0 in MATH 107 within 2 years or Math Level 5 within 2 years) and Reading Level 5 and Writing Level 4.</p>

COURSE	TITLE	CREDIT HOURS	TEXT
MATH118	The Art of Geometry	3	This course emphasizes visualization and appreciation of the beauty of mathematics through geometry; translates between visual and symbolic representations of objects used in visual arts; applies mappings, symmetry, similarity, tilings, vectors, and geometric constructions of shapes to working with 2D and 3D figures; uses geometry software, hands-on techniques and models. (F,Sp). Prerequisite: (Minimum 2.0 in MATH 107 within 2 years or Math Level 5 within 2 years) and Reading Level 5 and Writing Level 4.
MATH119	Math - Applications for Living	4	Uses strategies of arithmetic, geometry, and algebra to solve problems and effectively communicate solutions in a variety of occupational disciplines. Applies reasoning, problem solving, teamwork, mathematical thinking and modeling to measurement, proportions, percents, graphs, formulas, variables, geometry concepts, coordinate systems, and statistical reasoning and probability. (F,Sp). Prerequisite: (Minimum 2.0 in MATH 107 within 2 years or Math Level 5 within 2 years) and Reading Level 5 and Writing Level 4.
MATH120	College Algebra	4	This course is for students who do not intend to take MATH 122 or MATH 151, but may want to continue to MATH 141. Properties and graphs of linear, quadratic, polynomial, rational, exponential and logarithmic functions, with an emphasis on applications including finance, business/industry, life and social sciences. (F,Sp). Prerequisite: (Minimum 2.0 in MATH 112 within 2 years or Math Level 6 within 2 years) and Reading Level 5 and Writing Level 4. Course Note: If you need MATH 122 or MATH 151, take MATH 121 instead of MATH 120.
MATH121	Precalculus I	4	This course provides the foundation in college algebra essential for subsequent mathematics courses. Preparing students for calculus is emphasized. Topics include polynomial, rational, radical, exponential, and logarithmic functions; solving equations/inequalities algebraically and graphically; and mathematical modeling/regression in problem solving. (F,Sp,Su). Prerequisite: (Minimum 2.5 in MATH 112 within 2 years or Math Level 6 within 2 years) and Reading Level 5 and Writing Level 4
MATH122	Precalculus II	4	Second in two-course sequence, following MATH 121. Topics include right triangle trigonometry, trigonometric functions, graphs, identities and equations, inverse trig functions, laws of sines/cosines, polar coordinates, vectors, systems of linear equations, sequences, series, conic sections, parametric equations, permutations, combinations, and binomial theorem. Degree credit may not be earned in both MATH 121/122 and MATH 126. (F,Sp,Su). Prerequisite: (Minimum 2.0 in MATH 121 within 2 years or Math Level 7 within 2 years) and Reading Level 5 and Writing Level 4.
MATH126	Honors Pre-Calculus	5	MATH 126 is a 5 credit course on elementary functions with trigonometry. Topics include basic definition and concept of function, properties and graphs of polynomial, rational, exponential, logarithmic, trigonometric, and inverse trigonometric functions, polar coordinates, conic sections, parametric equations, systems of equations and the Binomial Theorem.(F,Sp,Su). Prerequisite: (Minimum 3.5 in MATH 112 within 2 years or Math Level 6 within 2 years) and Reading Level 5 and Writing Level 6 and Department Approval.
MATH130	Finite Math w/College Algebra	4	This course is for students whose programs do not require trigonometry. Topics include linear, exponential, quadratic, polynomial and logarithmic functions, mathematics of finance, matrices, linear programming, permutations, combinations, probability, and elementary statistics. In addition, students will solve applied problems by completing required computer/graphing calculator assignments. (F,Sp,Su). Prerequisite: (Minimum 2.0 in MATH 112 within 2 years or Math Level 6 within 2 years) and Reading Level 5 and Writing Level 4.
MATH141	Calculus with Applications	3	This course provides an introduction to calculus with an emphasis on applications in business, economics, social/life sciences and other fields not requiring an extensive study of calculus. Topics include functions, derivatives, the definite integral and their applications. (Mathematics, Physical Science, Computer Science, and Engineering majors should take MATH151.) (F,Sp,Su). Prerequisite: (Minimum 2.0 in MATH 120 or MATH 121 or MATH 130 within 2 years or Math Level 7 within 2 years) and Reading Level 5 and Writing Level 6.
MATH151	Calculus I	4	The first course in a three semester calculus sequence. Topics include limits, continuity, derivatives of algebraic, trigonometric, exponential and logarithmic functions, linear approximation, L'Hopital's rule, integration and the fundamental theorems of calculus. Applications of the calculus to both physical and geometric problems are emphasized. (F,Sp,Su). Prerequisite: (Minimum 2.0 in MATH 122 within 2 years or Math Level 9 within 2 years) and Reading Level 5 and Writing Level 6.
MATH152	Calculus II	4	The second course in a three-semester calculus sequence. Topics include techniques and applications of integration, derivatives of inverse trigonometric functions, improper integrals, sequences and infinite series, power series representation of functions, 3D-coordinate systems, and vectors. (F,Sp,Su). Prerequisite: (Minimum 2.0 in MATH 151 or MATH 161 within 2 years) and Reading Level 5 and Writing Level 6.
MATH161	Honors Calculus I	4	First course in a two semester honors calculus sequence. Topics include limits, continuity, derivatives of algebraic, trigonometric, exponential and logarithmic functions, linear approximation, L'Hopital's rule, integration, and fundamental theorems of calculus. Applications of calculus to both physical and geometric problems is emphasized, in addition to a special emphasis on concepts and theory. (F,Sp). Prerequisite: Minimum 3.0 in MATH 122 within 2 years and Reading Level 5 and Writing Level 6. Course Note: Qualified dual-enrolled high school students may take this course.

COURSE	TITLE	CREDIT HOURS	TEXT
MATH162	Honors Calculus II	4	Second course in a two semester honors calculus sequence. Topics include techniques and applications of integration, derivatives of inverse trigonometric functions, improper integrals, sequences and infinite series, power series representation of functions, conic sections and polar coordinates. Special emphasis is placed on concepts and theory. (F,Sp). Prerequisite: Minimum 2.0 in MATH 161 within 2 years or minimum 3.0 in MATH 151 within 2 years. Course Note: Qualified dual-enrolled high school students may take this course.
MATH201	Math for Elementary Teachers I	4	The first course in a two-course sequence for prospective elementary teachers. Topics include real number systems and their properties, sets, logic, number theory, and probability. Emphasis is on active engagement in mathematical investigation to develop problem-solving skills and conceptual knowledge essential for teaching elementary school mathematics. (F,Sp). Prerequisite: (Minimum 2.0 in MATH 112 within 2 years or Math Level 6 within 2 years) and Reading Level 5 and Writing Level 6.
MATH202	Math for Elementary Teacher II	4	The second course in a two-course sequence for prospective elementary teachers. Topics include data exploration, descriptive statistics and geometry concepts and measurement. Emphasis is on active engagement in mathematical investigations to develop problem-solving skills and conceptual knowledge essential for teaching elementary school mathematics. (F,Sp). Prerequisite: Minimum 2.0 in MATH 201 within 2 years and Reading Level 5 and Writing Level 6.
MATH253	Calculus III	4	The last course in a three-semester calculus sequence. Multivariable calculus and vector analysis are studied. Topics include vector algebra, curves and surfaces in 3D-space, vector valued functions, partial derivatives, multiple integrals, line integrals, and surface integrals. Applications of all these topics are presented. (F,Sp,Su). Prerequisite: (Minimum 2.0 in MATH 152 or MATH 162 within 2 years) and Reading Level 5 and Writing Level 6.
MATH254	Intro to Differential Equation	4	An introduction to the basic methods for solving ordinary differential equations. Topics include the methods for solving first order equations (separable, exact, linear, Bernoulli), undetermined coefficients, variation of parameters, series, Laplace transforms, and numerical methods (modeled using softard), and Fouier series. Applications are emphasized. Simulation software will be used to model differential equations.(F,Sp,Su). Prerequisite: Minimum 2.0 in MATH 253 within 2 years and Reading Level 5 and Writing Level 6.
MATH260	Linear Algebra	4	This introduction to linear algebra includes the study of systems of linear equations, vector equations, linear independence, determinants, matrix algebra, vector spaces and subspaces, dimension of a vector space, rank, linear transformations, eigenvalues and eigenvectors, diagonalization, inner products, orthogonal sets, and the Gram-Schmidt process, with applications.(Sp). Prerequisite: Minimum 2.0 in MATH 253 within 2 years and Reading Level 5 and Writing Level 4.
MATH281	Honors Math Seminar	1	Students solve a set of challenging mathematics problems which are not normally encountered in other classes. Creative and independent thinking is encouraged and developed. (Sp). Prerequisite: (Minimum 2.0 in MATH 151 or MATH 161 within 2 years) and Department Approval.
MATH295	Ind Study in Mathematics	1 to 4	An opportunity for self-directed learners to explore topics related to, but not taught in the curriculum. Students spend at least two hours per week for each credit. A detailed proposal must be submitted by the student for approval by the Department and supervising instructor prior to registration. (F,Sp,Su). Prerequisite: Department Approval.
METD100	Basic Mechanical Drafting	3	This course teaches the fundamental concepts of drafting and design using sketches and manual drafting skills. The student will learn the basics of orthographic projection, lettering, sketching, dimensioning techniques, and much more. (F,Sp). Prerequisite: Reading Level 3 and Writing Level 2 and Math Level 3.
METD105	PC Applications for Technology	3	This course provides an introduction to PCs as used in a technical-industrial setting. Basic computer hardware knowledge and simple file management practices are taught. Students will use Windows, word processing, spreadsheet, computer graphics, and presentation software. The Internet will be used to obtain assignments, turn in homework, and research projects. (F, Sp, Su). Prerequisite: None.
METD110	Mechanical CAD Drafting I	4	This is an introductory course in mechanical drafting and computer aided drafting using CAD software . Instruction includes orthographic projection, auxiliary views, secondary auxiliary view projections, sections, dimensioning techniques, and printing. Students will complete a series of drawings on the computer to demonstrate understanding of the concepts presented. (F,Sp,Su). Prerequisite: Minimum 2.0 in (METD 100 or Mechanical Drafting Placement Test 80%) and Reading Level 4 and Writing Level 4 and Math Level 4.

COURSE	TITLE	CREDIT HOURS	TEXT
METD111	Mechanical CAD Drafting II	4	This course covers advanced drafting and design techniques needed to project successive auxiliary views from various orthographic views. Layout and design concepts will also be stressed. Students will use computers with CAD software to complete practical design projects in problem solving and creativity applicable to the automotive, industrial, and/or aerospace industries. (F,Sp). Prerequisite: Minimum 2.0 in METD 110 and Reading Level 4 and Writing Level 4 and Math Level 4.
METD120	Planning and Scheduling	3	An introduction to planning, scheduling, and managing jobs within a manufacturing environment. Students quote and enter jobs into a scheduling system, create travelers, collect time against existing jobs, generate charts, create visuals, and report status regarding an existing job. Teamwork, work flow, work cells, standardization, outsourcing, and automation will be discussed. (F). Prerequisite: (Minimum 2.0 in METD 105 or PC Applications for Technology Placement Test 80%) and Reading Level 4 and Writing Level 4 and Math Level 4.
METD130	Geometric Dimension/Tolerance	4	This course covers the principles and methods of dimensioning and tolerancing for specific design requirements on engineering drawings. Uniform practices for stating and interpreting these requirements will be stressed. Content includes use and understanding of the symbolic method of specification relating to tolerances being applied using ASME/ANSI M14.5Y 1994 standards. (F,Sp). Prerequisite: Minimum 2.0 in (METD 100 or Mechanical Drafting Placement Test 80%) and Reading Level 4 and Writing Level 4 and Math Level 4.
METD150	Industrial Blueprint Reading	3	This course covers basic concepts in orthographic projection, with emphasis on interpretation of engineering drawings. Areas also covered include measurement systems, technical sketching, dimensioning, sectional and auxiliary views, and tolerancing. (F,Sp,Su). Prerequisite: None. Recommended: METD 100.
METD150A	Introduction to Print Reading	0.25	This module introduces the student to industrial print reading, including reading and using scales, and identifying line types used on industrial prints. Students also learn how to sketch single view drawings. (F,Sp,Su). Prerequisite: Minimum 2.0 in METD 100 or concurrently.
METD150B	Industrial Drawing Types	1.25	In this module the student will learn how to identify orthographic projection drawings and primary auxiliary, section and pictorial views. (F,Sp,Su). Prerequisite: Minimum 3.0 in METD 150A.
METD150C	Title Blocks and Notes	0.75	In this module the student will learn how to read and decipher information found in a title block and notes, how to determine what parts are called for from the materials list, and how to identify engineering changes notes. (F,Sp,Su). Prerequisite: Minimum 3.0 in METD 150B.
METD150D	Dimensioning	0.75	In this module students learn how to read, interpret, and determine proper placement of dimensions and how to use proper dimensioning terms. Students will also be able to identify symbols and notes pertaining to machining processes and surface texture specifications. (F,Sp,Su). Prerequisite: Minimum 3.0 in METD 150C.
METD170	Special Topics/Eng & Design	.25 to 8	This course offers students the opportunity to learn new or advanced skills in Computer Aided Drafting and Design and other related topics. Specific content may vary with each offering and will be related to the Computer Aided Drafting and Design Program and profession. (F,Sp,Su). Prerequisite: Determined by Section.
METD220	Basic Unigraphics/NX	4	This is the first of a two-semester course sequence that covers the fundamentals of the Unigraphics System of interactive design. This course covers comprehensive CAD concepts of 2-D and 3-D construction and basic solid modeling, as well as some of the concepts of drafting. Prior CAD system experience is required. (F,Sp). Prerequisite: Minimum 2.0 in METD 110.
METD221	Advanced Unigraphics/NX	4	This is the second of a two-semester course sequence that covers the design and construction of sophisticated solid models of complex assemblies and components, and the production of dimensioned and toleranced engineering drawings of those components. Advanced concepts of Unigraphics modeling will be discussed and utilized in class projects. (Sp). Prerequisite: Minimum 2.0 in METD 220 and Math Level 5.
METD230	CAM Data Preparation	2	This course provides the knowledge and skills necessary to modify CAD mold data prior to machining. The student is introduced to feature creation and suppression, adding attribute information to a CAD model, bill of material generation, reference sets, and creating simplified machining models for rough machining operations. (Sp). Prerequisite: Minimum 2.0 in (METD 220 and METM 220) and Reading Level 4 and Writing Level 4 and Math Level 4.
METD250	Detailing Assembly Drawings	4	This course builds on previous courses giving students an advanced understanding of assemblies and the details pulled from CAD assemblies. Students will also be able to identify how machine processes and various types of dies and components are used to create parts and assemblies. (F). Prerequisite: Minimum 2.0 in METD 130 and Reading Level 4 and Writing Level 4 and Math Level 4.

COURSE	TITLE	CREDIT HOURS	TEXT
METD260	Jigs and Fixture Design	4	This course will teach detailing techniques and dimensioning which will be emphasized through the development of working drawings. These drawings will be extracted from a design concept or assembly type drawing. Familiarization with standard components will also be stressed. Students will be responsible for being familiar with and understanding various jig and fixture components. (Sp). Prerequisite: Minimum 2.0 in (METD 250 and METM 110).
METD270	Basic Mold Design	4	This course instructs students in the design principles of plastic injection molds and products. CAD software will be used to design injection molds and undercuts, determine proper temperatures, identify various types of ejection methods, and choose appropriate injection methods. Students will print designs using a 3D printer. (F). Prerequisite: Minimum 2.5 in METD 220.
METD271	Advanced Mold Design	3	This course instructs students in moldflow analysis. Identification of materials, creation and analysis of 3D models, and interpretation of the data to determine optimum process feasibility will be stressed. Tooling and plastic products will be emphasized when using the finite element analysis software in the creation of molds. (Sp). Prerequisite: Minimum 2.5 in METD 270.
METD295	Engineering/Design Project Lab	1 to 4	This course is intended to give advanced drafting and design students an opportunity, through mutual agreement between student and instructor, to complete project(s) on one of several available CAD systems. (F,Sp). Prerequisite: Department Approval.
METM100	Manufacturing Processes	3	This course provides students with a comprehensive study of the materials, concepts, and processes used in modern manufacturing which is augmented by field trips to local manufacturing plants. This course is designed for those who are pursuing careers in manufacturing design, engineering, and supervision. (F,Sp,Su). Prerequisite: Reading Level 3 and Writing Level 4. Recommended: MATH 050 or Math Level 4.
METM105	TQM in Manuf & Production	4	Students will learn the basic principles, concepts and philosophy of quality in the manufacturing environment. This course emphasizes process capability, control charts, methods and analysis, production and inventory control of an industrial organization. Using manufacturing systems, students will collect and analyze data to control manufacturing parameters to maintain product specifications. (F,Sp). Prerequisite: (Minimum 2.0 in MATH 050 or Math Level 4) and Reading Level 5 and Writing Level 4.
METM110	Intro to Precision Machining	4	This course introduces machine tool principles and practices used in industry. Topics include safety, terminology, measurement, manual milling, manual lathe, drilling, basic CNC setup and CNC programming. A working knowledge of hand and machine tools is achieved through a series of lectures, demonstrations, and hands-on projects. (F,Sp). Prerequisite: Minimum 2.0 in (METD 100 or METD 150 or Mechanical Drafting Placement Test 80%) and Reading Level 3 and Writing Level 4 and Math Level 4.
METM115	Introduction to Plastics	3	This course will provide students an introduction to the plastics industry. Materials and production development will be taught including an overview of basic methods. Plastics terminology will also be covered. Safe operating procedures will be emphasized. (F,Sp). Prerequisite: Minimum 2.0 in METM 100 and Reading Level 5 and Writing Level 4.
METM120	Effective Use/Machine Handbook	4	Machinery's Handbook is the recognized source for all phases of the metal working industry. This course will familiarize each student with the effective utilization of information contained in Machinery's Handbook. (F,Sp,Su). Prerequisite: Reading Level 3 and Math Level 4.
METM120	Machinery's Handbook: Math	0.5	This module examines the use of mathematics to solve problems involving segments of circles, area, and volume. Students learn how to use tables to solve math problems, determine hole coordinates, and calculate weights. (F,Sp,Su). Prerequisite: None. Recommended: MATH 114.
METM120	Mach Hdbk: Prop of Materials	0.5	This module examines the properties of materials and the differences between SAE and tool steels. Topics include locating information in the Machinery's Handbook using key words, and understanding the applications and effects of each element in steel. Hole sizes produced for inch and metric socket cap screws are also covered. (F,Sp,Su). Prerequisite: None. Recommended: MATH 114.
METM120	Mach Hdbk: Machining Oper	1	This module examines cutting speeds and feeds for use on CNC and conventional machines. Topics include types of tooling used and identification of that tooling. CNC applications and the tooling required to properly set the cutting speeds and feeds are also explored. (F,Sp,Su). Prerequisite: None. Recommended: MATH 114.

COURSE	TITLE	CREDIT HOURS	TEXT
METM120I	Mach Hdbk: Inspection	1	This module examines various gear systems, inspection of those gear systems, and the different tolerances and allowances used in the trades. Students will also learn the methods used to check angles and tapers using a sine bar. (F,Sp,Su). Prerequisite: None. Recommended: MATH 114.
METM120E	Mach Hdbk: Machine Elements	1	This module examines the use of bearings and different types of keys, including the tolerances of each, and the taper used on common twist drills, counterbores, and reamers. Conversion tables are used to convert weights and measurements. (F,Sp,Su). Prerequisite: None. Recommended: MATH 114.
METM130	Issues in Global Manufacturing	4	This course introduces current issues and trends in the manufacturing environment. Students will learn methods to organize and develop resources for continuous improvement. This course will emphasis team work and inter-related functions within successful companies including research, conceptual design, detailed design, production planning, lean manufacturing, sales, and customer support. (F,Sp). Prerequisite: Reading Level 5 and Writing Level 6.
METM150	Advanced Precision Machining	4	In this course, students will set up and operate CNC lathes, CNC mills, and grinding equipment, write CNC programs, identify and select tooling, and perform precision measurements. Topics covered include safety and preventive maintenance, the eight basic functions of a CNC machine control, and high speed machining processes. (Sp). Prerequisite: Minimum 2.0 in METM 110 and Reading Level 4 and Writing Level 4 and Math Level 4.
METM170	Special Topics/Precision Mach	.25 to 8	This course offers students the opportunity to learn new or advanced skills in Precision Machining and Maintenance and other related topics. Specific content may vary with each offering but will be related to the Precision Manufacturing Technology Program and profession. (F,Sp,Su). Prerequisite: Determined by Section.
METM171	Special Topics/Machining P/Z	.25 to 8	This course offers students the opportunity to learn new or advanced skills in Precision Machining and Maintenance and other related topics. Specific content may vary with each offering but will be related to the Precision Manufacturing Technology Program and profession. This course will be offered on a Pass/Fail basis. (F,Sp,Su). Prerequisite: Determined by Section.
METM190	Metallurgy and Heat Treatment	4	This course introduces the science of metallurgy, a domain of materials science that studies the physical and chemical behavior of metallic elements. Students acquire a working knowledge of the properties, uses and heat treat processes of commonly used metals and alloys. Topics are explored through lecture and laboratory analysis. (F,Sp). Prerequisite: Reading Level 5 and Writing Level 6 and Math Level 4. Recommended: High School Chemistry or CHEM 125.
METM195	Metrology & Adv Inspection	2	This pre-engineering course introduces the science of precision measurement, focusing on accuracy and application as well as problem solving as it relates to dimensional metrology. Topics include measurement processes and feasibility, industry standards, and operation of the Coordinate Measuring Machine. Quality systems, calibration systems, and Statistical Process Control are also explored. (F,Sp). Prerequisite: Minimum 2.0 in (METD 130 and METM 110) and Reading Level 4 and Writing Level 2 and Math Level 4.
METM200	High Speed Precision Milling	3	Students learn advanced CNC programming using CAM software (currently PowerMILL). They will design, program, and run complex three-dimensional CNC programs. Students will create mold inserts using small diameter tools with high spindle speeds and feed rates, while emphasizing minimal tool breakage, air time, programming time and high quality surface finish, using multi-axis machining techniques. (F). Prerequisite: Minimum 2.0 in METM 150 and Reading Level 4 and Writing Level 4 and Math Level 4.
METM210	Adv High Speed Precision Mill	3	Students learn how to design, program, and run complex three-dimensional CNC programs. Mold inserts using small diameter tools with high spindle speeds and high feed rates will be created. This class emphasizes minimal tool breakage, air time, programming time and surface finish using 3-, 4-, and 5-axis milling. (F,Sp). Prerequisite: Minimum 2.0 in METM 200 and Reading Level 5 and Writing Level 6 and Math Level 5.
METM220	Basic Mastercam	4	Mastercam is a powerful graphics based programming software for CNC machine tools. Mastercam software is designed to generate CNC programs from mechanical CAD drawings. Students will use Mastercam to solve CNC programming problems in both 2-D and 3-D environments and run selected programs on CNC equipment. (F,Sp). Prerequisite: Minimum 2.0 in METM 110.
METM221	Advanced Mastercam	4	The student will learn the advanced CNC programming functions of the MasterCAM software. The successful student will be able to design, program, and run 3-dimensional CNC programs and check the toolpath using the MasterCAM verify toolpath function. (Sp). Prerequisite: Minimum 2.0 in METM 220.

COURSE	TITLE	CREDIT HOURS	TEXT
METM225	Basic Unigraphics NC	4	Unigraphics NC (Numerical Control) is a leader in parametric Computer Aided Manufacturing software used to graphically program CNC machine tools. Course topics will cover preparation of drawings for programming, basic APT programming, Multi-axis programming and Overlay features. Selected programs will be run on CNC machines. (Sp). Prerequisite: Minimum 2.0 in (METM 110 and METD 220).
METM230	Princ/Electric Discharge Mach	4	This course introduces the student to the fundamentals of Electrical Discharge Machining (EDM). Safety, principles of operation, programming and operation of both Ram and Wire EDM are explored. Lectures, demonstrations and projects are used. Projects assigned will require setup, programming and operation of EDM machines. (F,Sp). Prerequisite: Reading Level 4 and Writing Level 4 and Math Level 5. Recommended: METM 110.
METM235	Electrode Extraction	2	An introduction to creating CAD models for Electrical Discharge Machining (EDM). The student will determine when conventional machining is not applicable and when an extracted electrode is required. Student's design, program, and machine electrodes. Visual documentation for electrode burn locations are generated, and tool path templates applied to machining electrodes. (F,Sp). Prerequisite: Minimum 2.0 in (METD 220 and METM 220) and Reading Level 4 and Writing Level 4 and Math Level 4.
METM250	Mold Build Fitting & Spotting	3	This course instructs students in fitting and spotting processes of mold inserts prior to final assembly of a plastic injection mold. Emphasis is placed on fitting and spotting processes relative to repairing an existing mold. Techniques to minimize the fitting and spotting of a new mold will also be demonstrated. (F,Sp). Prerequisite: Minimum 2.0 in METM 150 and Reading Level 4 and Writing Level 4 and Math Level 4.
METM260	Mold Build Assembly	3	This course examines mold assembly principles and practices used in industry, including safety, terminology, assembly, and disassembly techniques. Mold processes and mold build procedures are used to complete new and repaired molds. A working knowledge of mold assembly and mold repair is achieved using mechanical, hydraulic, electrical, and welding applications. (F,Sp). Prerequisite: Minimum 2.0 in METS 115 and Reading Level 4 and Writing Level 4 and Math Level 4.
METM295	Precision Machine Project Lab	1 to 4	An advanced course for students wishing to do in-depth work in the machine shop area or to develop trade-entry skills. Students select projects compatible with their individual fields of work. (Approval may be given to take this course twice for a maximum of eight credits.) (F,Sp,Su). Prerequisite: Department Approval.
METS100	Maintenance Safety Practices	2	This course covers the basics of safety in the machine maintenance occupations. Included are local, state and federal safety regulations. This course is a prerequisite for, or to be taken concurrently with all MFGM courses that have a lab. (F,Sp,Su). Prerequisite: Reading Level 3 and Writing Level 4.
METS100A	Safety/Health in the Workplace	0.4	This module introduces safety and health in the workplace. Topics include: responsibility for safety, company safety programs, unsafe acts and conditions, recognizing hazards, types of accidents, accident investigation, handling emergencies, and the use of personal protective equipment (PPE). The module also covers government safety and health regulations and the rights of employees and employers. (F,Sp,Su). Prerequisite: Reading Level 3 and Writing Level 4.
METS100B	Chem/Tool/Mtrl Handling Safety	0.4	This module explains how to work safely with chemicals and how to use hand and power tools safely. The module also discusses materials handling, including hazards associated with material handling, the value of teamwork, proper storage of materials, and safety rules for working with or around industrial trucks. (F,Sp,Su). Prerequisite: Reading Level 3 and Writing Level 4.
METS100C	Work Safe w/Mach & Electricity	0.5	This module explains how to work safely with machinery and electricity. Topics include: safety guards, other safety devices, and OSHA lockout/tagout procedures. The module also covers safe practices with electricity and electrical equipment, including understanding electricity and the electric circuit, preventing and treating injuries from electricity, and use of the National Electrical Code. (F,Sp,Su). Prerequisite: Reading Level 3 and Writing Level 4.
METS100D	Fire Safety	0.3	This module covers fire safety. Topics include: causes of fire, the classes of fires, fire and explosion hazards, preventing fires and explosions, fire-fighting substances, fire hoses, portable fire extinguishers, and fire protection equipment. (F,Sp,Su). Prerequisite: Reading Level 3 and Writing Level 4.
METS100E	Create a Safe Work Environment	0.4	This module discusses protecting your health and creating a safe work environment. Topics include: ergonomics, noise, radiation, asbestos, dust, lung disease, fetal protection, industrial housekeeping, walking and working surfaces, safety in traffic, working at elevations, using ladders and scaffolds, industrial lighting, safety in extreme heat, working in confined spaces, and welding and cutting safety. (F,Sp,Su). Prerequisite: Reading Level 3 and Writing Level 4.

COURSE	TITLE	CREDIT HOURS	TEXT
METS102	Industrial/Construction Safety	2	This course covers safety in the industrial workplace and on construction worksites. Included are local, state and federal safety regulations. The focus will be on the prevention of accidents but will teach the correct response if an accident should occur. First aid, CPR/AED certificates will be issued upon successful completion. (F, Sp, Su). Prerequisite: Reading Level 3 and Writing Level 2. Course Note: This course requires students to be certified in CPR and First Aid as part of the course grade. Training will occur as part of traditional on-campus sections. Online students have the option of attending CPR and First Aid sessions at LCC's West Campus. Students who cannot travel to LCC will need to make other arrangements to become certified.
METS105	Handtools and Measurements	3	This course teaches the student the proper and safe use of hand tools used in the manufacturing maintenance profession. The proper use of torque wrenches, power hand tools, wrenches, marking and striking devices, measurement devices, taps and dies, and other miscellaneous hand tools is covered. (F,Sp,Su). Prerequisite: Minimum 2.0 in (METS 100 or METS 102 or ELTE 102 or HVAC 102 or WELD 102 or concurrently).
METS110	Mechanical Power Transmissions	4	This course will teach theory and industrial application of power transmission gear drive systems, chain drive systems, belt drive systems, couplings, clutch and brake and more. (F,Sp). Prerequisite: Minimum 2.0 in (METS 100 or METS 102 or ELTE 102 or HVAC 102 or WELD 102 or concurrently) and Math Level 4.
METS110A	Intro to Power Transmissions	0.75	This module examines the function of mechanical drives, which are found in every industry in the world--including manufacturing, construction, military, communications, and transportation. Topics include general safety practices of mechanical systems and basic fundamentals of mechanical drives. (F,Sp,Su). Prerequisite: Minimum 2.0 in (METS 100 or METS 102 or ELTE 102 or HVAC 102 or WELD 102 or concurrently).
METS110B	Power Transmission Belt Drives	1	This module covers the basic concepts and operation of v-belt drives. Students will learn how to install, align, and maintain v-belt drives. (F,Sp,Su). Prerequisite: Minimum 3.0 in METS 110A.
METS110C	Power Transmission Chain Drive	0.75	This module covers the basic concepts and operation of chain drive systems. Students will learn how to install, align, and maintain chain drives. (F,Sp,Su). Prerequisite: Minimum 3.0 in METS 110B.
METS110D	Power Transmission Couplings	0.5	This module examines the types and functions of couplings used in power transmissions. Students will learn how to install, align, select, and maintain flexible couplings. (F,Sp,Su). Prerequisite: Minimum 3.0 in METS 110C.
METS110E	Power Transmission Gear Drives	1	This modules covers the basic concepts and operation of gear drive systems. Students will learn how to install, align, select, and maintain gear drives. (F,Sp,Su). Prerequisite: Minimum 3.0 in METS 110D.
METS115	Intro to Mechanical Systems	4	This course introduces the student to the theory and selection criteria for mechanical power systems. Topics discussed include pneumatics, hydraulics, and mechanical drives. Lectures include fundamentals and real life applications in designing basic systems. (F,Sp). Prerequisite: Reading Level 4 and Writing Level 4 and Math Level 4.
METS120	Industrial Pneumatics	3	An introduction to the concepts, principles, and components of industrial pneumatic systems, this course covers gas laws, theory of air compression, regulators, filters, valves, pneumatic actuators, and pneumatic circuits with emphasis on pneumatic diagrams and circuit design. Lecture and labs give students a hands-on approach to the field of pneumatics. (F,Sp). Prerequisite: Minimum 2.0 in (METS 100 or METS 102 or ELTE 100 or ELTE 102 or HVAC 102 or WELD 102 or concurrently) and Math Level 4.
METS125	Intro to Hydraulics/Pneumatics	3	This course introduces the student to the theory of basic hydraulic and pneumatic principles as they relate to automated systems. Topics include application of components, causes of malfunctions in the system, and system troubleshooting strategies. (F). Prerequisite: Minimum 2.0 in (METS 102 or ELTE 102 or HVAC 102 or WELD 102 or concurrently) and Reading Level 3 and Writing Level 2 and Math Level 3.
METS130	Industrial Hydraulics	4	Industrial hydraulics introduces the theory of fluid power and circuits covering pumps, pressure valves, flow valves, cylinders, filters and motors, etc., as they are used in industry today. This will be done with lectures and labs related to each of the respective components. (F,Sp). Prerequisite: Minimum 2.0 in (METS 100 or METS 102 or ELTE 100 or ELTE 102 or HVAC 102 or WELD 102 or concurrently) and Reading Level 4 and Writing Level 4 and Math Level 4.
METS130A	Introduction to Hydraulics	0.5	This module introduces the basic concepts of hydraulics and addresses the principles of pressure and flow as applied in fluid power systems as well as the numerous requirements for fluids in a hydraulic system. (F,Sp,Su). Prerequisite: Minimum 2.0 in (METS 100 or METS 102 or ELTE 100 or ELTE 102 or HVAC 102 or WELD 102 or concurrently) and Math Level 5.

COURSE	TITLE	CREDIT HOURS	TEXT
METS130B	Hydrl Connect/Fittings/Seals	0.5	This module describes the types of connecting lines and fittings used to carry fluid between the pumps, valves, actuators, etc. The module also covers the prevention of leakage and the types of seals and seal materials required for hydraulic applications. (F,Sp,Su). Prerequisite: Minimum 4.0 in METS 130A.
METS130C	Hydrl Reservoirs/Conram Cntrl	0.5	This module covers main and secondary functions of a reservoir and reservoir components. A general discussion on reservoir sizing and reservoir designs is included along with explanations of various fluid temperature conditioning devices. The module also reviews the sources, effects, and the reduction of contamination in industrial hydraulic systems. (F,Sp,Su). Prerequisite: Minimum 4.0 in METS 130B.
METS130D	Hydraulic Actuators and Pumps	0.5	This module covers actuators, the output device of hydraulic systems, and the operation of different types of hydraulic pumps. (F,Sp,Su). Prerequisite: Minimum 4.0 in METS 130C.
METS130E	Hydraulic Control Valves	0.7	This module covers hydraulic control valves: directional control valves, which control the direction of fluid flow in a hydraulic circuit; pressure control valves, which perform functions such as limiting maximum system pressure; and the use and types of flow control valves in a hydraulic circuit. (F,Sp,Su). Prerequisite: Minimum 4.0 in METS 130D.
METS130F	Hydraulic Accessories	0.5	This module explains the various accessories used to perform special functions in hydraulic systems: accumulators, pressure intensifiers, pressure switches, instruments for measuring pressures and flows, and sound dampening devices. (F,Sp,Su). Prerequisite: Minimum 4.0 in METS 130E.
METS130G	Hydraulic Systems	0.8	This module explains how hydraulic circuits are combined to form systems. (F,Sp,Su). Prerequisite: Minimum 4.0 in METS 130F.
METS140	Rigging	3	This course covers uses and strengths of ropes, chains, block and tackles, and the construction and erection of gin poles, with a study of rope knots used in rigging and cranes. Safe working strength of slings, hooks, sheaves, ropes and chains, and the use of personal safety equipment will be covered. (F,Sp,Su). Prerequisite: Minimum 2.0 in (METS 100 or METS 102 or ELTE 102 or HVAC 102 or WELD 102 or concurrently) and Math Level 4.
METS140A	PPE/Power Line Safety/Risk Mgt	0.4	This module describes how to do a personal protection equipment evaluation for any rigging activity and how to identify and control power line safety issues. The module also covers the basics of risk management. (F,Sp,Su). Prerequisite: Minimum 2.0 in (METS 100 or METS 102 or ELTE 102 or HVAC 102 or WELD 102 or concurrently) and Math Level 4.
METS140B	Basic Rigging/Cribbing/Jacking	0.3	This module examines the proper use of slings for lifting objects, the identification of damaged slings, and the prevention of such damages. (F,Sp,Su). Prerequisite: Minimum 4.0 in METS 140A.
METS140C	The Rigging Triangle	0.4	This module examines the use and interpretation of rigging charts for chains, wire rope, synthetic rope, and slings. It also covers calculation of the load placed on the rigging gear and the application of the necessary rigging equipment to safely complete a rigging task. (F,Sp,Su). Prerequisite: Minimum 4.0 in METS 140B.
METS140D	Load Control and Multipliers	0.6	This module explains how to calculate Below-The-Hook total load, describes safe placement of slings on loads, and describes how to correctly reeve a set of blocks on a crane. (F,Sp,Su). Prerequisite: Minimum 4.0 in METS 140C.
METS140E	Blocks/Trmntns/Hoists/Cargo	0.7	This module covers the use of come-alongs, jacks, and rollers, how to correctly secure a load for cargo shipment, and how to correctly reeve a set of blocks on a crane. (F,Sp,Su). Prerequisite: Minimum 4.0 in METS 140D.
METS140F	Personnel Lifting/Cranes	0.6	This module covers crane types and crane part identification, crane safety rules, hand signals used for crane operator communication, identification of safe and unsafe loads, and how to prevent lift accidents. (F,Sp,Su). Prerequisite: Minimum 4.0 in METS 140E.
METS150	Robotics & Automated Control	3	This course includes the basics of electrical components, mechanical components, electrical drives, pneumatic and hydraulic control circuits, robotics, fundamentals of digital logic and an introduction to programmable logic controllers (PLCs) in a complex mechatronic system. By understanding the complete system, the student will learn and apply troubleshooting strategies to correct malfunctions. (Sp). Prerequisite: Minimum 2.0 in (METS 102 or ELTE 102 or HVAC 102 or WELD 102 or concurrently) and Reading Level 3 and Writing Level 2 and Math Level 3.
METS170	Special Topics/Mechanical Sys	.25 to 8	This course offers students the opportunity to learn new or advanced skills in Manufacturing and other related topics. Specific content may vary with each offering but will be related to the Manufacturing Program and profession. (F,Sp,Su). Prerequisite: Determined by Section.

COURSE	TITLE	CREDIT HOURS	TEXT
METS175	Fork Lift Truck Driver Trng	0.5	Students will learn the basic safety guidelines and basic operational procedures of industrial fork trucks. The instruction will combine lecture, written materials and hands-on operation of a fork truck. (F,Sp,Su). Prerequisite: None.
METS210	Lubrication and Bearings	4	This course covers instruction in advanced theory and practice of machine tool repair including lubrication principles, bearing maintenance, laser alignment, ultrasonic measurement, infrared, vibration analysis, and more. (F,Sp). Prerequisite: Minimum 2.0 in (METS 100 or METS 102 or ELTE 102 or HVAC 102 or WELD 102 or concurrently) and Math Level 4.
METS230	Electrohydraulics	4	Advanced Industrial Hydraulics builds upon the theory of fluid power and circuits covering electrohydraulic systems and components, proper voltage, electrical feedback and various other hydraulic powered systems as they are used in industry today. This will be done with lectures and labs related to each of the respective components. (F,Sp). Prerequisite: Minimum 2.0 in METS 130 or concurrently.
METS290	Manufacturing Internship	3	This course provides Manufacturing students with practical work experience in industry. Students work for an employer in a supervised environment which provides an opportunity to apply knowledge and skills learned in the classroom and lab to an actual job situation. (F,Sp,Su). Prerequisite: Department Approval. Recommended: 2.5 GPA or greater.
METS295	Mechanical Systems Project Lab	1 to 4	An advanced course for students wishing to do in-depth work in the mechanical systems/machine maintenance area or to develop trade-entry skills. Students select projects compatible with their individual fields of work. (Approval may be given to take this course twice for a maximum of eight credits.) (F,Sp,Su). Prerequisite: Department Approval.
MGMT101	Management Special Topics	1 to 3	This course explores current issues, knowledge, skills, attitudes and/or behaviors relevant to the professional development of managers and management students. Specific topics will vary by semester; check semester schedule book for topics to be offered. (F,Sp). Prerequisite: Reading Level 4 and Writing Level 4.
MGMT150	Managing Customer Relations	3	This course is designed to help customer service workers and managers explore the dynamics of customer service and customer relations. The course includes strategies for providing for customers needs, behavioral skills and knowledge for effective customer service, verbal and non-verbal skills for effective customer communication, and techniques for measuring success. Focus is on the dynamics of building successful relationships. (F,Sp). Prerequisite: Reading Level 4 and Writing Level 4.
MGMT200	Creative Thinking for Business	3	This course takes an experiential approach to helping students understand and explore elements of the creative process. It is designed to develop skills, eliminate barriers, and allow students to apply thinking skills to business situations. (F,Sp). Prerequisite: Reading Level 4 and Writing Level 4. Recommended: Have taken at least two or more BUSN, MGMT or business experience.
MGMT223	Supervisory Skills	3	This course presents supervisory principles and practices for first-line supervisors. Emphasis is on developing interpersonal and first line supervisory skills. Managerial functions are introduced, along with policies, decision-making, and the responsibilities of supervisors for overall work performance and employee development and evaluation. (F,Sp). Prerequisite: Reading Level 4 and Writing Level 4.
MGMT224	Human Resource Management	3	This is a survey course which examines the role of human resources management and its contribution to the total organizational effort. Emphasis will be placed on the evolution of human resource management, recruitment and selection, improving performance, compensation and incentives, safety and health, employee-management relations, and current legislation. (F,Sp). Prerequisite: Reading Level 5 and Writing Level 4.
MGMT225	Principles of Mgmt/Leadership	3	Designed to reflect the dynamics of our changing world, this course covers such topics as management/leadership functions/processes, quality, ethics, global issues and the challenges and opportunities of diversity. Emphasis is on theories and skills of management and leadership at the mid-organizational level. (F,Sp). Prerequisite: Reading Level 5 and Writing Level 6.
MGMT227	Training/Development for Busn	3	This course is designed to cover all aspects of training in the business environment. Participants focus on assessing training needs, identifying training barriers, curriculum design, instructional techniques, evaluation, and adult learning theory. (Sp). Prerequisite: Minimum 2.0 in MGMT 224 or concurrently and Reading Level 5 and Writing Level 4.
MGMT228	Organization Behavior	3	Examines the dynamics of relationships at work. Integrates and applies behavioral and social science knowledge using a systems approach, and focuses on the nature of both people and organizations. Students will study individual and group behavior and will have opportunities to work on skills necessary for successful interaction in organizations. (F,Sp). Prerequisite: Reading Level 5 and Writing Level 4. Recommended: MGMT 223 or MGMT 224 or MGMT 225.

COURSE	TITLE	CREDIT HOURS	TEXT
MGMT229	Compensation Management	3	Students will gain a practical understanding of the principles and applications of compensation management. Students will study the theories, behaviors, and legal constraints affecting compensation practices, including job analysis, job evaluation methodologies, labor market surveys, variable pay approaches, and the administration of legally mandated and voluntary employee benefit programs. (F). Prerequisite: Minimum 2.0 in MGMT 224 and Reading Level 5 and Writing Level 4. Recommended: LABR 204.
MGMT231	Developing and Leading Teams	3	This course defines and examines team building, team leadership, and self-managed teams in the context of today's workplace. Students develop skills in writing team mission and vision statements, team goals, and action assignments. Chartering, problem solving, decision-making, conducting effective meetings, work sessions, negotiating, and presenting are also explored. (F,Sp). Prerequisite: Reading Level 4 and Writing Level 4.
MGMT234	Diversity in the Workplace	3	This course explores cultural, gender/sexual, physical, and other minority experiences in the workplace and in the world. The management of human resources will be examined from a domestic and global perspective. Emphasis is on helping the majority group and the minority group become aware of the other's opinions, feelings, and perspectives. Instruction takes an experiential, awareness training approach. (F,Sp,Su). Prerequisite: Reading Level 5 and Writing Level 4.
MGMT235	Independent Study/Manage/Lead	1 to 3	Students design and implement special research projects to apply personal and professional experience to an academic area of interest, linking theory with practice. Students meet with coordinator and work independently towards completion of project report. Students should plan a minimum 16 hours per credit and ten pages of report per credit. (F,Sp). Prerequisite: Department Approval.
MGMT237	Managing/Continual Improvement	3	This course provides an introduction to concepts of quality, continual improvement, systems thinking, and other new management practices. The history of the quality movement including key thinkers/leaders is covered. Methods for continual improvement teams, learning organizations, and new ways of thinking and leading are explored. (Sp). Prerequisite: Reading Level 4 and Writing Level 4 and Math Level 4.
MGMT239	Time and Stress Management	3	This course explores the relationship between time and stress management: stress is the causal factor for many of our physical and psychological problems. Methods for positively harnessing its energy are suggested, and techniques and strategies for using time and energy wisely are offered. Emphasis is placed on creating action plans and initiating corrective actions. (Sp). Prerequisite: Reading Level 4 and Writing Level 4.
MGMT280	Mgmt/Leadership Internship	3	This course provides an opportunity to apply classroom learning to a career-related position by working a minimum of 160 hours at an approved work site. A student may do an internship at his/her own job only if the duties are new, management or leadership related, and provide an appropriate learning situation. (F,Sp). Prerequisite: Department Approval. Recommended: Have completed a minimum of 30 Credits.
MGMT290	TIME Series Topics	1 to 3	Offers timely business topics in a flexible and innovative format which provides relevant and challenging learning experiences for educational and professional development. Specific topics vary by semester; see semester schedule book. Course descriptions for each topic may be viewed by going to the current semester syllabus at the LCC website. (F,Sp,Su). Prerequisite: Reading Level 4 and Writing Level 4. Course Note: The TIME Series offers independent, self-paced courses in management, marketing, and business skills for professional and personal development. In the summer, the TIME Series courses are offered in one 8 week session. Please pick up the TIME Series Information and Instruction Guide in 190 Gannon Building (GB). After you have registered, you may also access the Guide at the D2L Course site once the course is opened. After reading the Guide if you still have questions, contact TIME Series Coordinator Brenda Brown at 483-1460, 190.12 GB, or brownb@lcc.edu. Completed coursework for summer is DUE ON OR BEFORE Monday, July 23, 2012. Incompletes and extensions are not an option for the TIME Series Courses.
MGMT300	Leading for Possibility	3	Provides an overview of the changing roles of leadership within an organization and lays a foundation for exploration of the emerging roles and functions of leadership in today's changing environments. Theories and skills are applied to a variety of organizational settings. (F). Prerequisite: Reading Level 5 and Writing Level 6. Recommended: Have taken previous MGMT courses, and/or are enrolled in the Northwood 3+1 Program, or have management work experience.

COURSE	TITLE	CREDIT HOURS	TEXT
MGMT304	Organization Development	3	Based on the assumption that all managers and leaders must recognize, plan for, and manage organizational change, this course examines the process of improving organization effectiveness by means of a systematic change program. Students practice identifying problems, selecting appropriate interventions, building action plans, and developing facilitator skills. (F,Sp). Prerequisite: Reading Level 5 and Writing Level 6. Recommended: Have taken previous MGMT courses, and/or are enrolled in the Northwood 3+1 Program, or have management work experience.
MGMT329	Advanced Mgmt Communication	3	This is an advanced course in business communication skills for managers and leaders. It includes components of listening, non-verbal signals, oral presentations, facilitation, interviewing techniques, meeting management, business reports, and electronic/digital communications. This class is both informational and experiential. (F,Sp). Prerequisite: Minimum 2.0 in (WRIT 121 or WRIT 127). Recommended: Have taken at least three or more BUSN or MGMT course, or are enrolled in the Northwood 3+1 Program, or have several years business experience.
MGMT332	Ethics: Assumpt for the Future	3	This course is designed to sensitize participants to the impact of ethics on decision-making. Participants will examine values and assumptions, both personal and organizational, which influence management and leadership style. Exploration of the importance of intention and right relationships in strategy and the creation of the future workplace is also included. (F,Sp). Prerequisite: Reading Level 5 and Writing Level 6. Recommended: Have taken previous MGMT courses, and/or are enrolled in the Northwood 3+1 Program, or have management work experience.
MGMT335	Managerial Statistics	3	This course covers applications of statistical tools and techniques to improve managerial decision-making processes. It includes basic descriptive statistics and graphing techniques, probability, probability distributions, hypothesis testing, analysis of variance, regression analysis, time series and forecasting models. (F,Sp). Prerequisite: Minimum 2.0 in (MATH 112 or MATH 115 or MATH 117) and Reading Level 5 and Writing Level 6. Recommended: Have taken previous MGMT courses, and/or are enrolled in the Northwood 3+1 Program, or have management work experience.
MGMT337	Advanced Human Resource Mgmt	3	Human resource skills are developed at an advanced level. Workplace relationships between employee, manager, human resource department, and the organization are analyzed in areas of leadership and motivation, legal compliance, performance planning and evaluation, union-management dynamics, and recognition and reward practices. (F,Sp). Prerequisite: Reading Level 5 and Writing Level 6. Recommended: Have taken previous MGMT courses, and/or are enrolled in the Northwood 3+1 Program, or have management work experience.
MGMT338	Current Topics in Management	3	Study of specific current topics and issues that affect managerial/leadership decisions. Students explore internal and external constraints on actions. External factors considered include legal, social, educational, and political. Internal factors include shareholders, employees, and customers. (F). Prerequisite: Reading Level 5 and Writing Level 6. Recommended: Have taken previous MGMT courses, and/or are enrolled in the Northwood 3+1 Program, or have management work experience. Course Note: An online course may require students to travel to an exam site for proctored exams. If you live at least 60 miles from LCC's Main Campus you may request to test at an approved proctored location (additional fees may apply). For additional information please visit https://www.lcc.edu/services/testing/
MGMT345	Context and Transformation	3	This course is designed to help people of vision and courage examine the beliefs, principles, and behaviors which drive organizations. In seminar format, participants investigate possibilities for new ways of thinking together, focusing on emerging perspectives of ourselves, our organizations, our communities, and our world. Students explore the growing importance of environment in creating a context for transformation. (Sp). Prerequisite: Reading Level 5 and Writing Level 6. Recommended: Have taken at least three or more BUSN or MGMT courses, or are enrolled in the Northwood 3+1 Program, or have several years business experience.
MGMT346	Managerial Finance	3	This course is designed to provide necessary and practical skills to deal with financial matters and communicate with people who specialize in finance. Topics covered include basic financial analysis, short-term and long-term financing, financial planning, and managing the finance function.(F,Sp). Prerequisite: Minimum 2.0 in MATH 112 or MATH 115 or MATH 117 or equivalent and Reading Level 5 and Writing Level 6. Recommended: Have taken previous MGMT courses, and/or are enrolled in the Northwood 3+1 Program, or have management work experience.
MILS110	Army Leadership & Officer Dev	1	This course addresses duties and responsibilities of the Army officer and noncommissioned officer, and organizational structure of the Army, Army Reserve, and National Guard. Students will also explore the Army's role in joint operations, Army values, leadership, customs and traditions. (F,Sp). Prerequisite: None. Course Note: Call MSU Department of Military Science at (517) 355-1913 for specific days and times.

COURSE	TITLE	CREDIT HOURS	TEXT
MILS120	Army Leadership & Prob Solving	1	Topics include: fundamentals of basic Army leadership, military problem solving process, military briefing and writing skills, and goal setting and time management. Students are also introduced to the Army's developmental counseling program. (F, Sp). Prerequisite: None. Course Note: Call MSU Department of Military Science at (517) 355-1913 for specific days and times.
MILS210	Values & Ethics of Army Leader	1	Students will examine military case studies, critical dilemmas in combat situations and the ethical decisions Army leaders make to ensure mission success to develop an understanding of how to improve Army organizations and soldier performance. The Army's leadership development program, battle drills, land navigation, and combat decision making are also addressed. (F, Sp). Prerequisite: None. Course Note: Call MSU Department of Military Science at (517) 355-1913 for specific days and times.
MILS220	Challenges in Army Leadership	1	This course uses military case studies to study challenging situations for military leaders and units, and understand how to apply sound ethical leadership practices to implement decisions. Students will also develop an understanding of basic military small unit tactics. (F, Sp). Prerequisite: None. Course Note: Call MSU Department of Military Science at (517) 355-1913 for specific days and times.
MKTG100	Current Issues in Business	3	This is an introductory course designed to enhance a student's occupational preparedness and competence by promoting a better understanding of the competitive enterprise system. Classroom instruction will be combined with relevant marketing projects and professional community involvement to give students a solid foundation of marketing knowledge and managerial "know-how." (F,Sp). Prerequisite: Reading Level 5.
MKTG101	Marketing Special Topics	1 to 3	This course explores recently identified current issues, knowledge, skills, attitudes and/or behaviors relevant to the professional development of professionals in the marketing field and students of marketing. (F,Sp,Su). Prerequisite: None.
MKTG119	Mktg/Manage Your Profess Image	3	This course is a complete guide for everything people and their companies need to know to do the right thing at the right time in every business situation. Students will understand the importance of a professional image as it relates to business success and will develop a personal image development plan. (F,Sp). Prerequisite: Reading Level 5 and Writing Level 4.
MKTG120	Sales	3	This course presents the fundamentals of selling. Topics include the basics of sales, motivation, and human relations. The course is designed so that students will not only learn about selling, but to be able to do it. (F,Sp). Prerequisite: Reading Level 5 and Writing Level 4.
MKTG130	Retailing	3	Students will gain understanding of activities and strategies used in selling goods to ultimate consumers. The course develops an awareness of problems facing retailers and explores feasible solutions. Career opportunities in retailing are examined. (F,Sp). Prerequisite: Reading level 5 and Writing Level 4.
MKTG131	Merchandising	2	This course covers functions and policies of: what, when, where, how much, how to, and from whom to buy. The course provides introduction to merchandising, merchandise management, store management and operations, how to evaluate and set up effective controls, and new trends in merchandising. Career opportunities are also explored. (Sp). Prerequisite: Reading Level 5 and Writing Level 4.
MKTG140	Introduction to Advertising	3	Methods and techniques used in modern advertising. Information on the entire advertising function. Preparation of an advertising campaign will be required to facilitate hands-on understanding of the component parts which include marketing review, marketing plan, creative strategy, and media selection. (F,Sp). Prerequisite: Reading Level 5 and Writing Level 6.
MKTG200	Principles of Marketing	3	Designed to define marketing, develop an understanding of the marketing concept and functions, and generally investigate the field of marketing. Will cover the marketing environment; identifying consumer needs; examining product, price, promotion; and distribution strategies within our society. Provides a basic marketing understanding with practical applications. (F,Sp,Su). Prerequisite: Reading Level 5 and Writing Level 6. Recommended: BUSN 118.
MKTG202	Managerial Marketing	3	The course focuses on the solution of marketing problems through case analysis. It relates marketing to the total enterprise by analyzing problems, and suggesting approaches to business decision-making. Particular attention is paid to the elements of the marketing mix and how marketing management deals with these variables. (Sp). Prerequisite: Minimum 1.0 in MKTG 200 and Reading Level 5 and Writing Level 6. Recommended: MKTG 204 and Second Year Student.

COURSE	TITLE	CREDIT HOURS	TEXT
MKTG204	Marketing Research	3	Types of data, sampling, data collection, analysis, interpretation, and applications of marketing research. A practical managerial approach - not a statistical or mathematical orientation. Students will design and execute a marketing research project. (F). Prerequisite: Minimum 1.0 in MKTG 200 and Reading Level 5 and Writing Level 6.
MKTG210	Marketing on the Internet	3	This course will explore the impact of information technology on the practice of marketing. Course content focuses on the internet, its culture and procedures from a marketing perspective, and will include using the internet for customer contact and customer service. This class uses extensive hands-on activities. (F,Sp). Prerequisite: Reading Level 5 and Writing Level 4. Recommended: MKTG 200 and basic understanding of computers and their use on the Internet.
MKTG221	Consumer Behavior	2	Covers the basic perspectives involved in consumer motivation and decision-making. Students will investigate relevant variables that shape consumer actions and concepts that integrate the study of consumer behavior with the practice of marketing. (F). Prerequisite: Reading Level 5 and Writing Level 4.
MKTG229	Public Relations	2	Provides an introduction to principles involved in creating and maintaining good public relations. Techniques for developing improved employer-employee relations, customer relations, and the total public relations effort will be discussed and applied. (F,Sp). Prerequisite: Reading Level 5 and Writing Level 4.
MKTG231	Independent Study in Marketing	1 to 3	Advanced marketing students design, implement, and draw conclusions relevant to a marketing project in a specific area of interest in marketing. Minimum of 16 hours of work per credit is required. (F,Sp,Su). Prerequisite: Department Approval.
MKTG235	Marketing Internship	3	This course provides an opportunity to apply classroom learning to a career-related position by working a minimum of 160 hours at an approved work site. A student may do an internship at his/her own job only if the duties are new, marketing related, and provide an appropriate learning situation. (F,Sp,Su). Prerequisite: Department Approval. Recommended: Have completed a minimum of 30 Credits.
MRIT200	Professional Prospectus	1	This course serves to orientate the magnetic resonance imaging (MRI) student to the profession of medical imaging. Students will explore the integration of MRI within the encompassing health care system with emphasis on the interrelating roles of the various healthcare professionals. (Su). Prerequisite: Certificate students: ARRT Certification in Radiography and Department Approval; AAS students: minimum 2.0 in all prerequisite courses and Department Approval.
MRIT201	Computer Apps/Medical Imaging	3	This course addresses computer applications in the radiologic sciences related to MRI image capture, display, storage and distribution. The content imparts an understanding of the components, principles and operation of digital imaging systems, image data management, and data manipulation (post-processing). Basic concepts of patient information management including medical records management concerns, privacy and regulatory issues will also be covered. (F). Prerequisite: None.
MRIT220	MR Physics I	3	The first of a two semester sequence, this course will cover the basic principles of MRI, data acquisition, and tissue characteristics (proton spin, relaxation times, phasing and de-phasing) in image formation. (F). Prerequisite: Minimum 2.5 in MRIT 200.
MRIT222	MR Physics II	3	This course is the second of a two-semester sequence and provides a comprehensive overview of MRI pulse sequences, imaging parameters, and image quality control. (Sp). Prerequisite: Minimum 2.5 in MRIT 220.
MRIT229	Applied Sectional Anatomy	3	This course provides an overview of transverse, coronal and sagittal sectional anatomy of the human body. Special emphasis is placed on a study of the head and brain, thorax, abdomen and pelvis. The shoulder, elbow, hip and knee are also examined. Correlations between cadaver cross-sections, CTs, MRIs and radiographs are explored. (Su). Prerequisite: Certificate students: ARRT Certification in Radiography and Department Approval; AAS students: minimum 2.0 in all prerequisite courses and Department Approval.
MRIT230	MR Procedures and Pathophys I	3	This course provides an overview of imaging techniques related to the CNS (brain and spine), and MSK (musculoskeletal). Specific clinical applications, coils that are available and their use, considerations in the scan sequences, specific choices in the protocols, and positioning criteria are practiced. (F). Prerequisite: Minimum 2.5 in MRIT 200.
MRIT232	MR Procedures and Pathophys II	3	This is an overview of basic imaging techniques of the abdomen/pelvis and special imaging techniques of the heart and breast. Topics include clinical applications and available coils, their uses, and considerations in scan sequences; specific choices in protocols and positioning criteria; the plane that best demonstrates anatomical structures; and signal characteristics of normal/abnormal structures. (Sp). Prerequisite: Minimum 2.5 in MRIT 230.

COURSE	TITLE	CREDIT HOURS	TEXT
MRIT240	MRI Image Analysis	3	MRI images and procedures will be evaluated for optimal diagnostic value. Critical assessment will include principles of quality image formation, through identification of anatomy, identification of pathology, and parameter adjustments needed to be made for differential diagnosis. Additional discussion will focus quality control procedures, PACS image display, image post processing, and image archiving. (Sp). Prerequisite: Minimum 2.5 in MRIT 230.
MRIT260	MRI Pre-Clinical Preparation	3	This hybrid course prepares the MRI student for working in the clinical setting. Students will investigate various patient considerations that may require critical thinking in order to accomplish a diagnostic exam. The basics of MRI pharmacology will be explored and discussed. Students will be introduced to MRI equipment, quality control, and MRI procedures. (Su). Prerequisite: Certificate students: ARRT Certification in Radiography and Department Approval; AAS students: minimum 2.0 in all prerequisite courses and Department Approval.
MRIT261	Clinical Practice I	3	This is the first in a series of three progressive clinical education courses allowing the student an opportunity to observe, practice and master procedures in Magnetic Resonance Imaging (MRI) departments. Knowledge and skills related to MRI safety, equipment, patient care, and basic imaging procedures and protocols along with professional values, attitudes, and behaviors will be covered. (F). Prerequisite: Minimum 2.5 in MRIT 260.
MRIT262	Clinical Practice II	3	This is the second in a series of three progressive clinical education courses allowing the student an opportunity to observe, practice, and master additional procedures in Magnetic Resonance Imaging (MRI) departments. (Sp). Prerequisite: Minimum 2.5 in MRIT 261.
MRIT263	Clinical Practice III	3	This is the third in a series of three progressive clinical education courses allowing the student an opportunity to observe, practice and master additional special procedures and protocols in Magnetic Resonance Imaging (MRI) departments. (Su). Prerequisite: Minimum 2.5 in MRIT 262.
MRIT295	MRI Certification Exam Prep	3	This course provides the student with review and self-examination as preparation for the ARRT certification exam in Magnetic Resonance Imaging. (Su). Prerequisite: ARRT Board Eligible.
MUSC101	Vocal Jazz & Pop Ensemble	1	A select vocal ensemble specializing in jazz and contemporary music for mixed voices. Artistic and creative vocal skills, improvisation and interpretation are developed through ensemble, small group and solo performance. Participation in two to four concerts per semester is required. (F, Sp). Prerequisite: Department Approval by Audition. Recommended: Music reading skills. Course Note: A non-credit option is available for this class at the special rate of \$79, course fees included. See the NCCE 200 listing (CRN 23037) in the Community and Continuing Education section.
MUSC106	Private Music Lesson	2	Concentrated one-to-one training in vocal/instrumental skills, techniques and repertory available only to the following students: Music majors pursuing secondary performance venues, provisional applicants to the LCC Music Program, qualifying dual-enrolled high school students intending to enter the LCC Music Program and currently enrolled LCC Theater majors. (F, Sp,Su). Prerequisite: Music Major Audition.
MUSC108	Concert Choir	1	A larger student and community member mixed voice choir exploring diverse styles, genres, repertories and cultural traditions spanning the choral experience. General musicianship and training in choral singing are developed. Participation in two to four concerts per semester is required. (F, Sp). Prerequisite: Department Approval by Audition. Recommended: Music reading skills. Course Note: A non-credit option is available for this class at the special rate of \$79, course fees included. Please see the NCCE 200 listings in the Community and Continuing Education section.
MUSC119	Lansing Concert Band	1	A community band serving as the official band of the City of Lansing. The group performs throughout the year and plays all styles of music but primarily concentrates on traditional concert band literature. Students are required to play in public performances of the band. (F, Sp,Su). Prerequisite: Department Approval by Audition and Music reading skills. Course Note: A non-credit option is available for this class at the special rate of \$0. See the NCCE 200 listing (CRN 23040) in the Community and Continuing Education section.
MUSC121	Percussion Ensemble	1	The Percussion Ensemble rehearses and performs works of various styles, genres, cultural traditions and repertories. Percussion techniques and musical skills are developed through ensemble, small group and solo performances. Participation in two to four concerts per semester is required. (F, Sp). Prerequisite: Department Approval. Recommended: Music reading skills. Course Note: A non-credit option is available for this class at the special rate of \$79, course fees included. See the NCCE 200 listing (CRN 23038) in the Community and Continuing Education section.

COURSE	TITLE	CREDIT HOURS	TEXT
MUSC122	Guitar Ensemble	1	Explores guitar music of diverse styles (classical, jazz and contemporary) for large group, small combo and solo performance on acoustic, electric and bass instruments. Other instrumentalists/vocalists may join to expand the ensemble. Participation in two to four concerts per semester is required. (F, Sp). Prerequisite: Department Approval. Recommended: Music reading skills. Course Note: A non-credit option is available for this class at the special rate of \$79, course fees included. See the NCCE 200 listing (CRN 23034) in the Community and Continuing Education section.
MUSC123	Jazz Ensemble	1	The Jazz Ensemble rehearses and performs pieces of diverse styles from various periods in jazz history. Musical, interpretative and improvisational skills are developed through ensemble, small combo and solo performances. Participation in two to four concerts per semester is required. (F, Sp). Prerequisite: Department Approval by Audition. Recommended: Music reading skills. Course Note: A non-credit option is available for this class at the special rate of \$79, course fees included. See the NCCE 200 listing (CRN 23039) in the Community and Continuing Education section.
MUSC124	Experimental Music Ensemble	1	This course is dedicated to the exploration of new acoustic, electronic and electro-acoustic music ranging from open, aleatoric scores to fully determined notation. Compositional, improvisational and interpretative skills are developed through ensemble, small group and solo performances. (F,Sp). Prerequisite: Department Approval. Recommended: Music reading skills. Course Note: A non-credit option is available for this class at the special rate of \$79, course fees included. See the NCCE 200 listing (CRN 23036) in the Community and Continuing Education section.
MUSC134	Sound Reinforcement	4	Students learn to design, set-up and operate sound reinforcement systems for various live performances in musical, theater, corporate and community venues. Students will gain hands-on experiences with industry standard equipment and quality sound systems. (Sp). Prerequisite: Reading Level 3 and Writing Level 4.
MUSC138	Keyboard Harmony I	2	The course introduces fundamental keyboard skills primarily for music majors. Students develop facility in performing scales, arpeggios, intervals, chords, inversions, and diatonic harmonic progressions in all major and some minor keys. Pieces in two- to four-part textures are performed. Harmonizing melodies, simple transposition and reading lead sheets are introduced. (F, Sp). Prerequisite: Music Major Audition and Reading Level 5 and Writing Level 4 and Music reading skills.
MUSC143	Beginning Piano I - Summer	1	Course assumes no prior music experience or knowledge. Students are introduced to the rudiments of playing piano. Staff notation, rhythmic notation, correct fingering/hand positions, major scales, and primary chords are introduced. Simple two hand pieces are performed. (Su). Prerequisite: None. Recommended: Music reading skills.
MUSC144	Beginning Piano I	2	Course assumes no prior music experience or knowledge. Students are introduced to the rudiments of playing piano. Staff notation, rhythmic notation, correct fingering/hand positions, major scales, and primary chords are introduced. Simple two hand pieces are performed. (F, Sp). Prerequisite: None. Recommended: Music reading skills.
MUSC145	Beginning Piano II	2	This course is designed to take the student up to an intermediate level of playing. Rhythmic subdivisions, more complex fingering, and new major and minor keys are introduced. Two-hand pieces are performed. (F, Sp). Prerequisite: Minimum 2.0 in MUSC 144.
MUSC155	Class Voice Commercial I	2	Beginning course designed to introduce students to vocal techniques and performance skills required in singing/performing commercial music. Breathing, posture, diction, tone production, interpretative skills, and microphone techniques are presented and developed. Students are required to attend live performances. (F, Sp, Su). Prerequisite: None.
MUSC156	Class Voice Commercial II	2	The advanced course in a series of two, this course will refine techniques introduced in MUSC155. Students will prepare a final public performance. Students are required to attend live performances. (F,Sp,Su). Prerequisite: Minimum 2.0 in MUSC 155.
MUSC157	Applied Lesson I	2	Concentrated one-to-one training in vocal/instrumental skills, techniques and repertory for Music majors only. Students must perform in Music Studio convocations and attend public concert events. Progression to the next level of Applied Lessons is by successfully passing a jury performance adjudicated by a Music faculty panel. (F, Sp). Prerequisite: Music Major Audition.

COURSE	TITLE	CREDIT HOURS	TEXT
MUSC158	Applied Lesson II	2	Concentrated one-to-one training in vocal/instrumental skills, techniques and repertory for Music majors only. Students must perform in Music Studio convocations and attend public concert events. Progression to the next level of Applied Lessons is by successfully passing a jury performance adjudicated by a Music faculty panel. (F, Sp). Prerequisite: Minimum 2.0 in MUSC 157 or Music Major Audition.
MUSC163	Aural Skills I	1	This course allows students to develop their aural capacity through exercises in beginning melodic and rhythmic dictation. The ability to sing melodies on sight through the use of solfeggio will also be developed. This is the first of two courses in freshman aural skills. (F, Sp). Prerequisite: Music reading skills. Co-Requisite Course(s): MUSC 193.
MUSC164	Aural Skills II	1	This course allows students to develop their aural skills through intermediate exercises in melodic and rhythmic dictation. The ability to sightsing melodies through the use of solfeggio continue to be developed. This course is the second in a sequence of two freshman music major requirements. (F, Sp). Prerequisite: Minimum 2.0 in MUSC 163. Co-Requisite Course(s): MUSC 194.
MUSC168	Rudiments of Music	2	This course introduces students and beginning musicians to the basics of reading and notating music. Fundamentals of rhythm, meter, pitch, intervals, scales, chords, keys and simple harmonic progressions are reviewed. Elements of music are explored through musical examples drawn from a variety of styles and genres. (F, Sp,Su). Prerequisite: None.
MUSC181	Class Voice I - Summer	1	The first in a series of two courses for group and individual work on varied song literature. Emphasis is placed on vocal techniques such as breathing, posture, diction, tone production, and stage presence. Students are required to attend live performances. (Su). Prerequisite: None.
MUSC182	Class Voice I	2	The first in a series of two courses for group and individual work on varied song literature. Emphasis is placed on vocal techniques such as breathing, posture, diction, tone production, and stage presence. Students are required to attend live performances. (F, Sp). Prerequisite: None.
MUSC183	Class Voice II	2	The advanced course in a series of two. This course will refine techniques, such as breathing, posture, diction, tone production, and stage presence, introduced in MUSC182. Students are required to attend live performances. (F, Sp). Prerequisite: Minimum 2.0 in MUSC 182.
MUSC187	Class Guitar - Summer	1	This course is for beginners and experienced players who desire note-reading skills. Folk, blues, and classical guitar traditions are presented using basic plectrum technique. Beginning chord theory is introduced. Students will provide their own guitar, and attend live performances. (Su). Prerequisite: None.
MUSC188	Class Guitar	2	This course is for beginners and experienced players who desire note reading skills. Folk, blues, and classical guitar traditions are presented using basic plectrum technique. Beginning chord theory is introduced. Students will provide their own guitar, and attend live performances. (F, Sp). Prerequisite: None.
MUSC193	Music Theory I	4	First-semester freshman-level course in tonal harmony covering concepts and applications of scales, intervals, keys, rhythm, diatonic chords, inversions and basic part-writing for four voices. Harmonic progressions, cadence structures and simple forms are studied through both analysis and student composition. Introduces principles of counterpoint and jazz theory. (F, Sp). Prerequisite: Minimum 2.0 in (MUSC 168 or Music Theory Placement Test) and Reading Level 5. Co-Requisite Course(s): MUSC 163.
MUSC194	Music Theory II	4	Second-semester freshman-level course in tonal harmony covering diatonic seventh chords, non-chord tones, secondary functions, modulations and larger musical forms. Focus on advancing students' skills in part-writing, analysis, score-reading and counterpoint. Concepts are applied through student composition in classical, jazz and/or popular styles. (F, Sp). Prerequisite: Minimum 2.0 in (MUSC 193 or Music Theory Placement Test) and Reading Level 5. Co-Requisite Course(s): MUSC 164.
MUSC197	Intro to Music Technologies	2	This course introduces students to the role of computers in music. Students will learn the fundamental concepts of MIDI and digital audio recording and editing, mixing and producing work suitable for diverse media applications. Additionally, exploration of music notation and printing software is included for music majors. (F,Sp,Su). Prerequisite: None. Recommended: Familiarity with computers; music reading skills.
MUSC199	Music Appreciation	2	Designed for non-music majors, this course develops well-informed, focused listening. Students are acquainted with representative composers, compositions, and musical characteristics of a variety of style periods from early music through 20th Century music. Students are required to attend live performances. (F,Sp,Su). Prerequisite: Reading Level 5 and Writing Level 4.

COURSE	TITLE	CREDIT HOURS	TEXT
MUSC200	Music Fund for Elemen Teachers	3	This course addresses the cognitive and performance music skills necessary for early childhood, elementary and special education majors. Successful teaching methods for singing, movement, and focused listening will be presented along with skills on appropriate classroom instruments. (Sp). Prerequisite: Reading Level 5 and Writing Level 6. Recommended: Music reading skills.
MUSC230	Independent Study in Music	1 to 2	An opportunity for self-directed learners to explore topics related to, but not taught in the curriculum. Students spend at least two hours per week for each credit. A detailed proposal must be submitted by the student for approval by the Department and supervising instructor prior to registration. (F,Sp,Su). Prerequisite: Department Approval.
MUSC233	Music Seminar	1 to 4	Student will be given the opportunity to attend master classes on various related topics or perform in a production on the main stage or comparable space. Limited to individuals who have been selected as cast members or approved for master class. (F,Sp,Su). Prerequisite: Department Approval.
MUSC237	Musical Theater Performance	2	An introductory course for vocalists and actors emphasizing applying acting techniques to song performance. Students will explore music from a preselected range of musical theatre styles. Focus is on stage presence, movement, and advancing dramatic action through the song. The class concludes with a public performance. (F). Prerequisite: None. Recommended: Music Reading Skills.
MUSC240	Musical Cultures to 1750	4	An historical and analytical survey of music and its development from Antiquity through 1750. Emphasizes an understanding of both Western and non-western genres, styles, composers and literature in relationship to historical, geographical and cultural contexts. Strengthens aural analytical skills and understanding of fundamental musical concepts. (F,Sp). Prerequisite: Reading Level 5 and Writing Level 6.
MUSC241	Musical Cultures 1750-Present	4	An historical and analytical survey of music and its development from 1750 to the present. Emphasizes an understanding of both Western and non-western genres, styles, composers, literature and emerging world musics in relationship to historical, geographical and cultural contexts. Strengthens aural analytical skills and understanding of fundamental musical concepts. (F,Sp). Prerequisite: Reading Level 5 and Writing Level 6.
MUSC246	History of Blues and Jazz	2	An overview of the emergence, development and relevance of two of America's most genuine musical artforms. Stylistic, cultural, and sociological investigations of such musics provide a mirror to the ever-changing popular American soundscape. Informed listening introduces: major creator/performers, genres, expressions, and reflections of an increasingly global and technological musical world. (F). Prerequisite: Reading Level 5.
MUSC247	History and Culture of Rock	2	Survey of the origins, elements, developments, and reflections of Rock and Roll from its roots in the 1920s to the present. Major trends and artists are considered in stylistic, social, commercial, and global perspectives. Informed listening and comparative analyses reveal complex issues continuously redefining Rock music and its cultural legacy. (Sp). Prerequisite: Reading Level 5.
MUSC253	Business of Music	3	An introduction to the business aspects of the music industry. Areas covered include copyrights, contracts, trademarks, publishing, recording and record company operations, personal managers, booking agents, concert promotions, and unions. Students are required to attend live performances. (F,Sp,Su). Prerequisite: Reading Level 4 and Writing Level 4.
MUSC254	Band Management	2	This course is designed to assist the professional musician or manager in creating or improving a performing band. All major aspects of band management are covered, including intra-band arrangements, contracts, negotiations, format and material choice, equipment, finances, promotion and sales, road management, and basic organizational information. Students are required to attend live performances. (F,Sp). Prerequisite: Reading Level 4 and Writing Level 4.
MUSC257	Applied Lesson III	2	Concentrated one-to-one training in vocal/instrumental skills, techniques and repertory for Music majors only. Students must perform in Music Studio convocations and attend public concert events. Progression to the next level of Applied Lessons is by successfully passing a jury performance adjudicated by a Music faculty panel. (F,Sp). Prerequisite: Minimum 2.0 in MUSC 158 or Music Major Audition.
MUSC258	Applied Lesson IV	2	Concentrated one-to-one training in vocal/instrumental skills, techniques and repertory for Music majors only. Students must perform in Music Studio convocations and attend public concert events. A final jury or recital performance is adjudicated by a music faculty panel. (F,Sp). Prerequisite: Minimum 2.0 in MUSC 257 or Music Major Audition.

COURSE	TITLE	CREDIT HOURS	TEXT
MUSC263	Aural Skills III	1	This course is a continuation of the first year of aural skills training. The student will proceed to more advanced training in sightsinging, eartraining, and melodic, rhythmic and harmonic dictation. (Sp). Prerequisite: Minimum 2.0 in MUSC 164. Co-Requisite Course(s): MUSC 293.
MUSC270	Rock Guitar	2	A presentation on fundamental rhythm and lead guitar techniques and music theory concepts applicable to rock music from its rhythm and blues origin to the present, as well as other related popular styles. Student must provide own guitar. Students may be required to attend live performances. (F,Sp,Su). Prerequisite: None.
MUSC280	Private Composition	1	Private coaching/instruction for music majors, 40 minutes per week, in musical composition, giving attention and suggestion to melody, harmony, chord substitution, and formal design. Students are required to attend live performances. (F,Sp). Prerequisite: Department Approval.
MUSC292	Arranging & Songwriting	3	Sophomore-level course in the practical techniques of the working songwriter and popular music composer. Focus on advancing student's skills in melody, harmony, form, instrumentation, and song logic. Concepts of solo writing and collaboration are introduced. The development of an individual's unique compositional voice is encouraged. (F). Prerequisite: Minimum 2.0 in MUSC 194
MUSC293	Music Theory III	4	Sophomore-level course in advanced tonal and non-tonal harmonies preparing students for transfer to four-year programs or concluding studies in commercial music. Emphases on chromaticism and harmonic vocabularies of late 19th- and 20th-century musical styles including modality, serialism, pandiatonicism, aleatory music, and intermediate jazz theory. (Sp). Prerequisite: Minimum 2.0 in MUSC 194 and Reading Level 5. Co-Requisite Course(s): MUSC 263.
MUSC296	Music Internship	3	A worksite experience that serves as a business-related course for music management students. Students will work at venues that support music performance, promotions, business, management, and/or recording. Regularly scheduled progress reports will be given and discussed with the supervising faculty member.(F,Sp). Prerequisite: Department Approval.
MUSC298	Advanced Music Technologies	3	A continuation of the Intro to Music Technologies course. The student will proceed to more advanced training including manipulation of MIDI, digital audio editing, processing, synthesis and sound design. Special emphasis is placed on the synchronization of software through the rewire protocol and the development of real-time electronic based performance. (F,Sp). Prerequisite: Minimum 2.0 in MUSC 197. Recommended: Computer experience; Music reading skills.
NANO130	Introduction to Nanotechnology	4	This course introduces the science of nanotechnology and its potential impact on manufacturing processes and customer products. Students will learn the science behind nanotechnology and will be exposed to the principles of the equipment used to study and manipulate matter at the nanometer scale. (F,Sp). Prerequisite: Reading Level 5 and Writing Level 6 and (Math Level 6 or MATH 112 concurrently). Recommended: CHEM 151.
NCBD101	EPA RRP Certification Course	0	Contractors performing renovation, repair and painting projects that disturb lead-based coatings (including lead paint, shellac or varnish) in child-occupied facilities built before 1978 must be certified and must follow specific work practices to prevent lead contamination. Prerequisites: None . Course Note: Cost of this seminar is \$40.
NCCE050	Special Topics	0	These non-credit seminars explore current topics. Specific content may vary with each offering. (F,Sp, Su). Prerequisite: None.
NCCE100	Comp/Multimedia/Tech Seminars	0	Seminars in this non-credit series explore the use of applied technology. Students learn how to utilize software and multimedia features to enhance their creativity or improve needed skills. (F,Sp,Su). Prerequisite: None.
NCCE200	Creative Arts	0	This non-credit series of courses focuses on personal creativity through music and the arts. Seminars provide students hands-on opportunities in the areas of instrumental or vocal music, photography, or the visual and performing arts. (F,Sp,Su). Prerequisite: None.
NCCE300	Language/Communication Seminar	0	These non-credit seminars allow students to discover the basic premises and subtle nuances of the written and spoken word. Classes in this series may offer studies in foreign language and culture, as well as insights into the English language. (F,Sp,Su). Prerequisite: None.
NCCE400	Business and Finance Seminars	0	These non-credit seminars focus on issues relevant to personal finance and business. Students will have opportunities to learn strategies to more effectively manage their income and plan for the future. (F,Sp,Su). Prerequisite: None.
NCCE500	Science/Technical/Trade Sem	0	These non-credit seminars provide students with opportunities for personal enrichment through nature, technology, and vocational topics. Hands-on sessions allow participants the chance to expand their personal and professional interests through science and technology. (F,Sp,Su). Prerequisite: None.

COURSE	TITLE	CREDIT HOURS	TEXT
NCCE600	Citizenship and Law	0	This series of non-credit seminars provides participants opportunities to gain knowledge about political issues, current events, and civil liberties. Through lectures and discussions students will examine their values, learn more about national and international topics, and become more informed citizens. (F,Sp,Su). Prerequisite: None.
NCCE700	Health and Wellness Seminars	0	Seminars in this non-credit series are designed to promote personal well-being and increase awareness of physical and emotional health. Students will gain insight into strategies to enhance their daily life. (F,Sp,Su). Prerequisite: None.
NCCE800	Personal Interest Seminars	0	This wide variety of non-credit seminars provides students an opportunity to explore personal interest topics. These diverse classes have broad appeal for learners of all ages. Format for individual classes will vary depending on the topic. (F,Sp,Su). Prerequisite: None.
NCCE900	Study Abroad	0	These non-credit travel opportunities allow students to study abroad and experience another language and culture first-hand. Through these life enriching experiences, participants will gain an appreciation and knowledge of the international community. (Sp). Prerequisite: None.
NCEL111	High Begin Speaking/Listening	0	(F,Sp,Su). Prerequisite: None.
NCEL112	Inter Speaking/Listening I	0	(F,Sp,Su). Prerequisite: Minimum 2.0 in NCEL 111 or ELCC Placement Test.
NCEL113	Inter Speaking/Listening II	0	(F,Sp,Su). Prerequisite: Minimum 2.0 in NCEL 112 or ELCC Placement Test.
NCEL114	Adv Speaking/Listening I	0	(F,Sp,Su). Prerequisite: Minimum 2.0 in NCEL 113 or ELCC Placement Test.
NCEL115	Adv Speaking/Listening II	0	(F,Sp,Su). Prerequisite: Minimum 2.0 in NCEL 114 or ELCC Placement Test.
NCEL121	High Beginning Reading	0	(F,Sp,Su). Prerequisite: None.
NCEL122	Intermediate Reading I	0	(F,Sp,Su). Prerequisite: Minimum 2.0 in NCEL 121 or ELCC Placement Test.
NCEL123	Intermediate Reading II	0	(F,Sp,Su). Prerequisite: Minimum 2.0 in NCEL 122 or ELCC Placement Test.
NCEL124	Advanced Reading I	0	(F,Sp,Su). Prerequisite: Minimum 2.0 in NCEL 123 or ELCC Placement Test.
NCEL125	Advanced Reading II	0	(F,Sp,Su). Prerequisite: Minimum 2.0 in NCEL 124 or ELCC Placement Test.
NCEL131	High Beginning Writing	0	(F,Sp,Su). Prerequisite: None.
NCEL132	Intermediate Writing I	0	(F,Sp,Su). Prerequisite: Minimum 2.0 in NCEL 131 or ELCC Placement Test.
NCEL133	Intermediate Writing II	0	(F,Sp,Su). Prerequisite: Minimum 2.0 in NCEL 132 or ELCC Placement Test.
NCEL134	Advanced Writing I	0	(F,Sp,Su). Prerequisite: Minimum 2.0 in NCEL 133 or ELCC Placement Test.
NCEL135	Advanced Writing II	0	(F,Sp,Su). Prerequisite: Minimum 2.0 in NCEL 134 or ELCC Placement Test.
NCEL141	High Beginning Grammar	0	(F,Sp,Su). Prerequisite: None.

COURSE	TITLE	CREDIT HOURS	TEXT
NCEL142	Intermediate Grammar I	0	(F,Sp,Su). Prerequisite: Minimum 2.0 in NCEL 141 or ELCC Placement Test.
NCEL143	Intermediate Grammar II	0	(F,Sp,Su). Prerequisite: Minimum 2.0 in NCEL 142 or ELCC Placement Test.
NCEL144	Advanced Grammar I	0	(F,Sp,Su). Prerequisite: Minimum 2.0 in NCEL 143 or ELCC Placement Test.
NCEL145	Advanced Grammar II	0	(F,Sp,Su). Prerequisite: Minimum 2.0 in NCEL 144 or ELCC Placement Test.
NCEL151	TOEFL Preparation	0	(F,Sp,Su). Prerequisite: Minimum 2.0 in NCEL 143 or ELCC Placement Test or NCEL 144 concurrently.
NCEL191	Pronunciation Lab	0	(F,Sp,Su). Prerequisite: None.
NCEL192	Vocabulary Lab	0	(F,Sp,Su). Prerequisite: Department Approval.
NCEL199	Seminar : Special Subjects	0	(F,Sp,Su). Prerequisite: None.
NCFE101	Tax Preparer Exam Prep	0	An expert instructor will guide you in preparation to pass the IRS personal tax examination through usage of simulation tests and a comprehensive study guide. This course is for all tax preparers, accountants, and IRS enrolled agents. (F, Sp). Prerequisite: None . Course Note: Cost of this seminar is \$219.
NCFE102	End of Life Essential Prep	0	This course will assist people to prepare their essential financial, legal, and important paperwork and make adequate plans for the end of their life. (F,Sp,Su). Prerequisite: None. Course Note: Cost of this seminar is \$39.
NCHE101	Heart Saver CPR/AED	0	The Heartsaver CPR/AED course teaches CPR, AED use, and relief of choking in adults and children. It also teaches infant CPR and relief of choking, and the use of barrier devices for all ages. (F,Sp,Su). Prerequisite: None.
NCHE102	CPR for Health Care Prof	0	This non credit seminar is designed to provide healthcare professionals the ability to recognize several life-threatening emergencies, provide CPR, use an AED, and relieve choking in a safe, timely and effective manner. The seminar is intended for individuals working or planning to work in the healthcare profession. (F,Sp,Su). Prerequisite: None. Course Note: Cost of these seminars is \$88. If you are late for class you will not be permitted to attend the session.
NCHE103	CPR Renewal	0	This non credit seminar is designed to renew the provider status of healthcare professionals possessing a valid Basic Life Support (BLS) for Healthcare Provider card. Focus is on the ability to recognize several life-threatening emergencies, provide CPR, use an AED, and relieve choking in a safe, timely and effective manner. (F,Sp,Su). Prerequisite: Current Basic Life Support (BLS) for Healthcare Provider Card. Course Note: Cost of this seminar is \$76. If you are late for class you will not be permitted to attend the session.
NCHE104	CPR Instructor	0	This non credit seminar is to provide the opportunity and forum to acquire knowledge and skills to instruct and evaluate students in an American Heart Association Basic Life Support Provider course. This seminar uses the American Heart Association guidelines and criteria. (F,Sp,Su). Prerequisite: Current Basic Life Support (BLS) for Healthcare Provider Card, and American Heart Association Core Instructor Course Completion Certificate. Course Note: Cost of this seminar is \$200. If you are late for class you will not be permitted to attend the session.
NCHE105	CPR Instructor Renewal	0	This non credit seminar is designed to recertify CPR instructors and instructor trainers who have a valid American Heart Association CPR Instructor certificate. The student will be assessed on his/her ability to instruct and assess a student's progress in the Basic Life Support (BLS) Provider's courses according to AHA guidelines. (F,Sp,Su). Prerequisite: Current Basic Life Support (BLS), or CPR Card and Current CPR Instructor Card. Course Note: Cost of this seminar is \$76. If you are late for class you will not be permitted to attend the session.

COURSE	TITLE	CREDIT HOURS	TEXT
NCHE106	Peds 1st Aid/CPR for Daycare	0	This non credit seminar provides CPR and First Aid for Daycare Providers, teaching how to manage illness and injuries in a child in the first few minutes until professional help arrives. Topics include first aid basics, medical emergencies, injury emergencies, environmental emergencies, optional first aid topics, CPR and AED usage.(F,Sp). Prerequisite: None. Course Note: Cost of this seminar is \$125. If you are late for class you will not be permitted to attend the session.
NCHE110	Heart Saver First Aid	0	The Heartsaver First Aid Course teaches how to manage illness and injuries in the first few minutes until professional help arrives. Course content includes general principles, medical emergencies, and injury emergencies. Prerequisite: None.
NCHE120	Self-Paced Hlth Prov CPR Renew	0	This seminar is designed to complete the skills requirement for individuals who completed the BLS Healthcare Provider Online Part 1 self-paced course through the American Heart Association. This course focuses on skills review and skills validation testing. (F,Sp,Su). Prerequisite: Current Basic Life Support CPR and American Heart Association Part 1 Course Completion Certificate and Department Approval.
NCHE206	Cardiac Dysrhythmia Interpreta	0	This non credit course introduces the student to identification of common dysrhythmias seen on a monitor or telemetry unit. Content will include criteria, causes, hemodynamic effects, and treatment of dysrhythmias according to Advanced Cardiac Life Support (ACLS) guidelines. Use of monitoring equipment is integrated within the course content. (F,Sp,Su). Prerequisite: None. Course Note: Cost of this seminar is \$282.
NCHE210	PALS Training	0	This non credit seminar is designed for healthcare providers who participate in the care of pediatric patients. Focus is on developing knowledge and skills necessary to efficiently and effectively manage critically ill infants and children. All students must be currently working in Healthcare with children. (F,Sp,Su). Prerequisite: Current Basic Life Support (BLS) for Healthcare Provider Card. Course Note: Cost of this seminar is \$266.
NCHE211	PALS Renewal	0	This non credit seminar is designed to renew the provider status of healthcare professionals currently possessing a valid Pediatric Advanced Life Support (PALS) card. Focus is on developing knowledge and skills necessary to efficiently and effectively manage critically ill infants and children. All students must be currently working in Healthcare with children. (F,Sp,Su). Prerequisite: Current Basic Life Support (BLS) for Healthcare Provider Card and Current PALS Provider Card. Course Note: Cost of this seminar is \$173.
NCHE212	PALS Instructor Training	0	This course teaches practicing healthcare professionals who are certified in Pediatric Advanced Life Support (PALS) and Basic Life Support (BLS) to become a certified American Heart Association (PALS) Instructor. (F, Sp). Prerequisite: None . Course Note: Cost of this seminar is \$215. If you are late for class you will not be permitted to attend the session.
NCHE213	PALS Instructor Renewal	0	This course recertifies a current PALS instructor in their credentials as an AHA PALS instructor. (F, Sp). Prerequisite: Both current PALS Instructor Card and CPR card are necessary to be able to enroll in this course. Course Note: Cost of this seminar is \$90. If you are late for class you will not be permitted to attend the session.
NCHE227	Health Cont Ed Spec Topics	0	This course offers students the opportunity to learn new health career skills and knowledge. Specific up-to-date content will vary with each topic presented. (F,Sp,Su). Prerequisite: Determined by Section.
NCHE230	ACLS Training Seminar	0	This non credit seminar is designed for members of the healthcare team to develop knowledge and skills in Advanced Cardiac Life Support (ACLS). Focus is on enhancing skills in the treatment of the adult victim of cardiac arrest or cardiopulmonary emergencies using simulated clinical scenarios. All students must be currently working in Healthcare. (F,Sp,Su). Prerequisite: Current Basic Life (BLS) Support for Healthcare Provider Card. Course Note: Cost of this seminar is \$266. .
NCHE235	ACLS Renewal	0	This non credit seminar is designed to renew the provider status of healthcare professionals currently possessing a valid Advanced Cardiac Life Support (ACLS) card. Focus is on enhancing skills in the treatment of the adult victim of cardiac arrest or cardiopulmonary emergencies using simulated clinical scenarios. All students must be currently working in Healthcare. (F,Sp,Su). Prerequisite: Current Basic Life Support (BLS) for Healthcare Provider Card. Course Note: Cost of this seminar is \$173. If you are late for class you will not be permitted to attend the session.
NCHE236	ACLS Instructor Training	0	This course teaches a practicing healthcare professional who is certified in ACLS and BLS to become a certified American Heart Association ACLS Instructor. (F, Sp). Prerequisite: None . Course Note: Cost of this seminar is \$175. If you are late for class you will not be permitted to attend the session.

COURSE	TITLE	CREDIT HOURS	TEXT
NCHE237	ACLS Instructor Renewal	0	This course recertifies a current ACLS instructor in their credentials as an AHA ACLS instructor. (F,Sp). Prerequisite: Both current ACLS Instructor Card and CPR card necessary to be able to enroll in this course. Course Note: Cost of this seminar is \$**. If you are late for class you will not be permitted to attend the session.
NCHE250	Respite Care	0	This non credit respite care course is designed for persons who need to become care providers for children, adults, or the elderly who have disabilities or specialized care needs. This course provides best practices and methods to improve skills for quality care, confidence and performance. (Sp). Prerequisite: None. Course Note: Cost of this seminar is \$210.
NCHE260	EMS Refresher	0	This non credit course serves as a formal refresher to renew national registry and/or State of Michigan EMS license. Designed for current State of Michigan Medical First Responder (MFR), Emergency Medical Technician Basic and Specialist (EMT-B, EMT-S), and Paramedic who need to attend a formal refresher course or would prefer to obtain continuing education via a state-approved program of study. (Sp). Prerequisite: None.
NCHE270	EMS I/C Refresher	0	This non credit course serve as a formal instructor/coordinator refresher for State of Michigan EMS instructors/coordinators. Course meets State of Michigan I/C license renewal requirements. (Sp). Prerequisite: None.
NCHE301	Teach Back Methods-Nurse Aide	0	This workshop will provide nurse aides with methods for using effective teach-back techniques. These methods have been proven to close the gap of communication between clinician and patient, and also from clinician to clinician. (F,Sp,Su). Prerequisite: None. Course Note: Cost of these seminars is \$79.
NCHE302	Health Coaching-Nurse Aide	0	A workshop taught by an industry professional to provide nurse aides with the skills needed to communicate issues regarding health to a patient in order to receive their best understanding and receptivity. (F,Sp,Su). Prerequisite: None . Cost of this seminar is \$69.
NCHE303	Medication Reconciliation-Aide	0	This workshop for nurse aides will enable them to watch for red flags of drug/medicine/vitamins interactions. (F,Sp,Su). Prerequisite: None. Course Note: Cost of this seminar is \$69.
NCHE305	Aides-Motivate Your Patients!	0	This workshop will provide nurse aides with the 'know how' to motivate your patients to be in charge of their own healthcare. You will learn how to encourage your patients to take the leading role in managing their own health. (F,Sp,Su). Prerequisite: None . Course Note: Cost of this seminar is \$69.
NCHE401	Teach Back Techniques Workshop	0	This workshop will provide nurses with methods for using effective teach-back techniques. These methods have been proven to close the gap of communication between clinician and patient. Prerequisite: None . Course Note: Cost of this seminar is \$89.
NCHE402	Health Coaching Workshop	0	A workshop taught by an industry professional to provide nurses with the skills needed to communicate issues regarding health to a patient in order to receive their best understanding and receptivity. (F,Sp,Su). Prerequisite: None . Course Note: Cost of this seminar is \$89.
NCHE403	Medication Reconciliation	0	This workshop for nurses will enable them to understand the big picture of drug/medicine/vitamins, etc. interactions. (F,Sp,Su). Prerequisite: None. Course Note: Cost of this seminar is \$89.
NCHE404	Transitional Care Workshop	0	A workshop designed for nurses to learn how to bundle the total care of a patient into one seamless service for the best possible outcomes for their patients. (F,Sp,Su). Prerequisite: None . Course Note: Cost of this seminar is \$89.
NCHE405	Motivate Patient - Take Charge	0	This workshop will provide nurses with the know how to motivate their patients to be in charge of their own healthcare. Nurses will learn how to encourage their patients to take the leading role in managing their own health. (F,Sp,Su). Prerequisite: None . Course Note: Cost of this seminar is \$89.
NCHE406	Accountable Care	0	This course will support nurse aides to better coordinate care for Medicare patients by working effectively and seamlessly with Accountable Care Organizations (ACOs). This course will instruct nurses about the new Affordable Care Act, which is putting patients and doctors in control of their healthcare. (F,Sp,Su). Prerequisite: None. Course Note: Cost of this seminar is \$89.

COURSE	TITLE	CREDIT HOURS	TEXT
NCHE407	Dealing with End of Life	0	In this course, nurses and healthcare professionals will become better equipped to deal effectively with their patients who are facing the end of life. Topics to be covered include: principles of palliative care, ethical issues, and taking care of oneself. (F,Sp,Su). Prerequisite: None. Course Note: Cost of this seminar is \$159.
NCHE500	Healthcare Aquired Infection	0	This leadership seminar will provide healthcare leaders the tool needed to create policies and procedures in their domain which will enable the prevalent prevention of infections. (F,Sp,Su). Prerequisite: None. Course Note: Cost of this seminar is \$89. Uses Community and Continuing Education refunding rules. If you have any questions, call Community and Continuing Education at (517) 483-1860.
NCHE501	Preventing Pressure Ulcers	0	This leadership seminar will enable hospital and doctor office managers to create practices among their staff which are trained to prevent pressure ulcers from forming. (F,Sp,Su). Prerequisite: None. Course Note: Cost of this seminar is \$79.
NCHE502	Managing Patient Risks	0	This leadership seminar will provide the necessary information and tools for managers to be able to more effectively manage the risks which patients present. Managers will return to their staff armed with the knowledge and confidence to face common patient risks with empowerment to make solid decisions. (F,Sp,Su). Prerequisite: None. Course Note: Cost of this seminar is \$59.
NCHE506	Leadership in Accountable Care	0	This course will explain how to work effectively with Accountable Care Organizations (ACOs). Topics will include; the Affordable Care Act, purpose of the Centers of Medicare & Medicaid Services (CMS) and how to better coordinate care for Medicare patients by working effectively and seamlessly with these organizations. This will instruct leaders about how the new Affordable Care Act is putting patients and doctors in control of their healthcare. (F,Sp,Su). Prerequisite: None . Course Note: Cost of this seminar is \$89.
NCIT100	MOS Certification Prep	0	Povides training for those preparing to take any of the Microsoft Office Specialist (MOS) certification exams. Course also beneficial for brushing up on MS Office skills using the latest Microsoft technologies. (Sp). Prerequisite: None.
NCIT107	Mindset of Success	0	After you take the course you will feel empowered to take the lead of your job search and put your best foot forward in regard to networking. You will learn techniques which will give you the leading edge in presenting yourself in the most flattering image to potential employers. (F,Sp,Su). Prerequisiste: None. Course note: Cost of this seminar is \$59. Uses Community and Continuing Education refunding rules. If you have any questions, call Community and Continuing Education at (517) 483-1860.
NCIT108	Job Search Skills	0	This course will provide all participants with the confidence needed to conduct a productive job search to achieve their goal and land a new position. Students will develop a job search strategy which they can use to conduct the tasks associated with finding a new job. (F,Sp,Su). Prerequisite: None. Course Note: Cost of this seminar is \$79. Uses Community and Continuing Education refunding rules. If you have any questions, call Community and Continuing Education at (517) 483-1860.
NCIT109	Job Interviewing Success	0	An experienced HR person will provide tips and techniques for successful job interviewing. Participants will practice interviewing and obtain feedback on their strengths and learn areas to enhance their image to a prospective employer at a job interview. (F,Sp,Su). Prerequisite: None. Course Note: Cost of this seminar is \$59. Uses Community and Continuing Education refunding rules. If you have any questions, call Community and Continuing Education at (517) 483-1860.
NCIT110	Time and Task Management	0	By participating in this course, you will learn how to manage your time at work and in your job search. You will learn how to structure your day so that necessary tasks are done during your most productive time, and how to plan your daily schedule to maximize and prioritize your work so that when you leave at the end of the day, you will reflect on how much you were able to accomplish. (F,Sp,Su). Prerequisite: None. Course Note: Cost of this seminar is \$59. Uses Community and Continuing Education refunding rules. If you have any questions, call Community and Continuing Education at (517) 483-1860.
NCIT111	Social Media in the Workplace	0	Participants will be introduced to the many interesting and useful facets of social media and how to leverage it to their successful advantage in the workplace. (Sp, F). Prerequisite: None . Course Note: Cost of this seminars is \$59.
NCIT112	Computer Net Etiquette	0	This course provides newer computer users all of the information which is necessary to work properly and according to common corporate standards for using email properly. (F,Sp,Su). Prerequisite: None . Course Note: Cost of this seminar is \$59.

COURSE	TITLE	CREDIT HOURS	TEXT
NCIT113	Effective Work Communication	0	This workshop is designed to support the needs of every employee to be able to communicate effectively and professionally at work. Learn to present yourself in the best possible image by using your voice, body language, and word choices to make communication successful. (F,Sp,Su). Prerequisite: None . Course Note: Cost of these seminars is \$59.
NCIT114	Managing Relationships at Work	0	Through this coursework and practices, you will be able to more easily understand the hidden communication messages of your co-workers, enhance your ability to make and maintain advantageous professional relationships, and build a network of support in your new job. (F,Sp,Su). Prerequisite: None. Course Note: Cost of this seminar is \$59.
NCIT115	Be Organized at Work	0	Everyone can become more organized, and during this course, you will gain skills to organize your job search records, manage your home office, and develop a method for filing which works for you. (F,Sp,Su). Prerequisite: None. Course Note: Cost of this seminar is \$59.
NCIT116	Excellent Customer Service	0	Customers are vital to any business, and in this course, you will acquire the knowledge, skills, and mindset to be able to work with any customers you may encounter, including how to handle customer objections, how to handle difficult customers, and how to keep customers coming back to your business. (F,Sp,Su). Prerequisite: None. Course Note: Cost of this seminar is \$59.
NCIT117	Business Writing and Grammar	0	By participating in this course, you will learn how to write business letters, documents, and white paper summaries. You will feel comfortable with your usage of grammar and when your new manager asks you to write up meeting minutes, you will not panic, you will efficiently compose key points and messages into a useful document. (F,Sp,Su). Prerequisite: None. Course Note: Cost of this seminar is \$59.
NCLE100	Become a Language Interpreter	0	With our ever growing economy becoming more diverse, it is important to consider the needs of Limited English Speakers. As this population group grows, there is an increasing need for bilingual persons to enter this field of language interpretation. This course prepares individuals with the skill set and knowledge to work as a language interpreter, and provides the foundation for becoming certified in this field. (F,Sp,Su). Prerequisite: None. Course Note: Cost of this seminar is \$179.
NCLE101	Success in Chinese Workplace	0	This course will prepare persons who are going to work in China to be aware of this amazing country's geography, historical highlights, culture, philosophy, key economic drivers, common business courtesies, and language. Professionals will become confident about their upcoming job assignment in China because they will be prepared to develop successful relationships with the Chinese. (F,Sp,Su). Prerequisite: None . Course Note: Cost of this seminar is \$229.
NCME101	General Civil Mediation	0	This Michigan State Court Administrative Office (SCAO) MCR 2.411 approved training course includes these topics: advanced conflict resolution concepts, court processes, mediation process and techniques, negotiation dynamics, diversity issues, and dealing with multiple parties and standards of conduct for mediators. (F,Sp,Su). Prerequisite: None. Course Note: Cost of this seminar is \$995. Uses Community and Continuing Education Refunding Rules. If you have any questions, call Community and Continuing Education at (517) 483-1860.
NCME102	Domestic Relations Training	0	This comprehensive Michigan State Court Administrative Office (SCAO) MCR 3.216 approved training course is targeted to mediators who want to learn to effectively deal with all types of family and divorce issues. Topics will cover: family mediation theory and process, emotional issues, advanced communication skills, children's issues, custody and support, parenting time arrangements, property division, power balancing, domestic violence and abuse, tax implications, and pension and other financial concerns. Prerequisite: None. Cost of this seminar is \$1,495. Uses Community and Continuing Education refunding rules. If you have any questions, call Community and Continuing Education at (517) 483-1860.
NURS101	Nursing Directed Study	.25 to 3	This course is designed to update or enhance knowledge, skills, and competencies for: returning Nursing students, remediation, self-study, lecture/lab sessions, and/or supervised clinical. The course's foundation is based on the six Aims for Improvement of Quality Healthcare. A learning contract specifying objectives, activities and outcomes is required. (F,Sp,Su). Prerequisite: Department Approval.

COURSE	TITLE	CREDIT HOURS	TEXT
NURS102	Nursing Directed Study	.25 to 3	This course is designed to update or enhance knowledge, skills, and competencies for: returning Nursing students, remediation, self-study, lecture/lab sessions, and/or supervised clinical. The course's foundation is based on the six Aims for Improvement of Quality Healthcare. A learning contract specifying objectives, activities and outcomes is required. (F,Sp,Su). Prerequisite: Department Approval.
NURS118	Special Topics in Nursing	.25 to 8	This course offers students the opportunity to learn new nursing skills and knowledge. The foundation of this course is based on the six Aims for Improvement of Quality Healthcare. Specific up-to-date content will vary with each seminar and will be related to the nursing profession. (F,Sp,Su). Prerequisite: Determined by Section.
NURS119	Special Topics in Nursing	.25 to 8	This course offers students the opportunity to learn new nursing skills and knowledge. The foundation of this course is based on the six Aims for Improvement of Quality Healthcare. Specific up-to-date content will vary with each seminar and will be related to the nursing profession. (F,Sp,Su). Prerequisite: Determined by Section.
NURS150	Fundamentals Nurse Care I & II	9	This course introduces students to the roles of the professional nurse and healthcare team. Healthcare concepts including cultural, ethical, and legal issues emphasize the aging process. Nursing process is used for providing acute/long-term patient care. The course's foundation is based on the six Aims for Improvement of Quality Healthcare. (F,Sp). Prerequisite: Admission to Nursing Program and (Minimum 2.5 in (NURS 200 or concurrently) and (BIOL 202 or concurrently)) and Reading Level 5 and Writing Level 6.
NURS151	Fundamentals in Nursing Care I	5	This course introduces students to the roles of the professional nurse. Concepts related to healthcare delivery are presented, with a focus on the care of older adults. Nursing Process is used for providing long-term patient care. The course's foundation is based on the six Aims for Improvement of Quality Healthcare.(F). Prerequisite: Admission to Nursing Program and (Minimum 2.5 in (NURS 200 or concurrently) and (BIOL 202 or concurrently)) and Reading Level 5 and Writing Level 6.
NURS152	Fundamentals Nursing Care II	4	This course is a continuation of the concepts presented in NURS151. Some topics are Altered Nutrition, Pain, Perioperative Care, Vision and Hearing, and Ethics. Nursing Process is used for providing acute care patient care in hospitals. The course's foundation is based on the six Aims for Improvement of Quality Healthcare. (F, Sp). Prerequisite: Minimum 2.5 in (NURS 151 and NURS 200 and BIOL 202).
NURS160	Acute Nursing Care	6	Students use the nursing process caring for adults in a hospital setting adapting to common acute health problems. Pathophysiology and nursing interventions affecting the cardiovascular, respiratory, endocrine, gastrointestinal, neurological, and musculoskeletal body systems are presented. The course's foundation is based on the six Aims for Improvement of Quality Healthcare. (F,Sp). Prerequisite: Successful completion of Level I of the 2-year or 2nd Degree Accelerated Nursing Tracks or Level II-3rd semester of the 3-year Nursing Track.
NURS165	Maternity Nursing Care	4	Concepts of maternity nursing, well-child care, and therapeutic communication are discussed. Assessment and care of the childbearing family is presented. Basic needs and developmental tasks of childhood are discussed. Clinicals are in hospital maternal-child units. The course's foundation is based on the six Aims for Improvement of Quality Healthcare. (F,Sp,Su). Prerequisite: Successful completion of Level I of the 2-year or 2nd Degree Accelerated Nursing Tracks or Level I-2nd semester of the 3-year Nursing Track.
NURS166	Role of Prac Nurse (PN) in LTC	1	Students learn PN responsibilities in managing care for LTC patients: regulatory procedures, legal/ethical issues, clinical practice standards, and management of groups of patients. Students build on communication skills, effective interactions, and managing behavior for dementia patients. The course's foundation is based on the six Aims for Improvement of Quality Healthcare. (F,Sp,Su). Prerequisite: Successful completion of Level I of the 2-year or 2nd Degree Accelerated Nursing Tracks or Level II-3rd semester of the 3-year Nursing Track.
NURS196	Long-Term Care Nurse Intern	8	Long-term Care Nurse Intern is a residency course focusing on new PN graduates to transition from graduate PN to practicing nurse caring for long-term care residents. Acute and chronic conditions specific to the elderly are presented. The course's foundation is based on the six Aims for Improvement of Quality Healthcare. (F,Sp,Su). Prerequisite: Department Approval.
NURS200	Pharmacology-Nursing	3	NURS 200 provides nursing students with fundamental knowledge of Nursing Pharmacology. The focus is on drug classes, action in bodily systems, and role of the nurse in medication administration including pharmacology dosage calculation math. The course's foundation is based on the six Aims for Improvement of Quality Healthcare. (F,Sp,Su). Prerequisite: Minimum 2.5 in BIOL 202 or concurrently.

COURSE	TITLE	CREDIT HOURS	TEXT
NURS210	Transition to RN Program	6	The Transition Course prepares PN, Paramedic, and Respiratory Therapy Health Professionals for the role of the RN. Successful completion of the Transition Course allows a student to enter Level III of the RN Associate Degree program. The course's foundation is based on the six Aims for Improvement of Quality Healthcare. (Su). Prerequisite: Department Approval and Reading Level 5 and Writing Level 6. Recommended: Current work experience and current BLS and OSHA.
NURS260	Mental Hlth/Leadership Nursing	5	The student plans care for clients with psychosocial and medical problems emphasizing therapeutic communication and leadership skills. Mental Health/Leadership clinical is in psychiatric/medical units' hospitals, day treatment facilities, Department of Corrections, and community sites. The course's foundation is based on the six Aims for Improvement of Quality Healthcare. (F,Sp, Sum). Prerequisite: Successful completion of Level II of the 2-year or 2nd Degree Accelerated Nursing Tracks or Level II-4th semester of the 3-year Nursing Track or Level II of the Advanced Standing to RN Nursing Track. Recommended: BIOL 204.
NURS265	Pediatric Nursing Care	5	Health/illness in the pediatric population is discussed using a systems perspective. Nursing process/course concepts are integrated into care of pediatric patients/families in hospitals, clinics, and other healthcare settings. Students use progressively more complex critical thinking skills. The course's foundation is based on the six Aims for Improvement of Quality Healthcare. (F,Sp,Su). Prerequisite: Successful completion of Level II of the 2-year or 2nd Degree Accelerated Nursing Tracks or Level III-5th semester of the 3-year Nursing Track or Level II of the Advanced Standing to RN Nursing Track. Recommended: BIOL 204.
NURS280	Advanced Chronic Nursing Care	5	Students utilize the nursing process caring for adult clients adapting to chronic health problems; clients with immune system problems, hepatic failure, HIV, tuberculosis, diabetes mellitus, heart failure, and COPD. Clinical experiences include acute care/community facilities. The course's foundation is based on the six Aims for Improvement of Quality Healthcare. (F,Sp). Prerequisite: Successful completion of Level III of the 2-year or 2nd Degree Accelerated Nursing Tracks or Level III-6th semester of the 3-year Nursing Track or Level III of the Advanced Standing to RN Nursing Track.
NURS285	Advanced Acute Nursing Care	5	Students use the nursing process in caring for adults with critical health problems in acute care with leadership and management opportunities including: homeostatic responses of the cardiovascular/respiratory systems, fluid-electrolyte shifts, acid-base imbalances, and advanced monitoring/patient assessment. The course's foundation is based on the six Aims for Improvement of Quality Healthcare. (F,Sp). Prerequisite: Successful completion of Level III of the 2-year or 2nd Degree Accelerated Nursing Tracks or Level IV-7th semester of the 3-year Nursing Track or Level III of the Advanced Standing to RN Nursing Track.
NURS296	Acute Care Nurse Intern	4.5	NURS296 is for RN graduates transitioning from graduate to practicing nurse in caring for acutely ill patients. This course integrates advanced level course content, laboratory experiences, and "real-world" work experiences with an RN preceptor. The course's foundation is based on the six Aims for Improvement of Quality Healthcare. (F,Sp,Su). Prerequisite: Department Approval.
PARA200	Paramedic Directed Study	1 to 4	Provides selection of content from the Basic EMT or Paramedic curriculum to update or enhance current knowledge and skill for returning students and health care professionals. Through evaluation of previous learning, examinations, self study, and scheduling into needed lectures and labs students are advanced placed or readmitted into the Basic EMT or Paramedic program. (F,Sp). Prerequisite: Department Approval.
PARA221	Paramedic Medical Trauma I	5	This course provides information about the pre-hospital management of medical and traumatic conditions at the advanced life support level. Emphasis is placed on pathophysiology, recognition of signs and symptoms, review of basic life support management techniques, and strategies for advanced life support care. (F). Prerequisite: Admission to Paramedic Program and Reading Level 5 and Writing Level 6 and Math Level 4 and (minimum 2.5 in BIOL 145 or (BIOL 201 and BIOL 202)). Co-Requisite Course(s): PARA 231 and PARA 241 and PARA 251 and PARA 261.
PARA221A	Paramedic Medical Trauma IA	1	This course is one of five modules which provides information about the pre-hospital management of medical and traumatic conditions at the advanced life support level. Emphasis in this module is on the role and responsibilities of an advanced life support provider. (F,Sp,Su). Prerequisite: Acceptance to the Military Medic to Paramedic Program and Reading Level 5 and Writing Level 6 and Math Level 4 and (Minimum 2.5 in (BIOL 201 and BIOL 202) or BIOL 145).
PARA221B	Paramedic Medical Trauma IB	1	This course is one of five modules which provides information about the pre-hospital management of medical and traumatic conditions at the advanced life support level. Emphasis in this module is on foundational topics for advanced practice of airway and IV therapy. (F,Sp,Su). Prerequisite: Acceptance to the Military Medic to Paramedic Program and Reading Level 5 and Writing Level 6 and Math Level 4 and (Minimum 2.5 in BIOL 201 and BIOL 202) or BIOL 145).

COURSE	TITLE	CREDIT HOURS	TEXT
PARA221C	Paramedic Medical Trauma IC	1	This course is one of five modules which provides information about the pre-hospital management of medical and traumatic conditions at the advanced life support level. Emphasis in this module is on the trauma care as an advanced life support provider. (F,Sp,Su). Prerequisite: Acceptance to the Military Medic to Paramedic Program and Reading Level 5 and Writing Level 6 and Math Level 4 and (Minimum 2.5 in (BIOL 201 and BIOL 202) or BIOL 145).
PARA221D	Paramedic Medical Trauma ID	1	This course is one of five modules which provides information about the pre-hospital management of medical and traumatic conditions at the advanced life support level. Emphasis in this module is on medical care of respiratory, neurological, and endocrine emergencies as an advanced life support provider. (F,Sp,Su). Prerequisite: Acceptance to the Military Medic to Paramedic Program and Reading Level 5 and Writing Level 6 and Math Level 4 and (Minimum 2.5 in (BIOL 201 and BIOL 202) or BIOL 145).
PARA221E	Paramedic Medical Trauma IE	1	This course is one of five modules which provides information about the pre-hospital management of medical and traumatic conditions at the advanced life support level. Emphasis in this module is on geriatric care, stress as advanced life support provider, emergency driving, and behavioral emergencies. (F,Sp,Su). Prerequisite: Acceptance to the Military Medic to Paramedic Program and Reading Level 5 and Writing Level 6 and Math Level 4 and (Minimum 2.5 in (BIOL 201 and BIOL 202) or BIOL 145).
PARA222	Paramedic Medical Trauma II	5	PARA222 incorporates previous knowledge gained at the basic EMT level and PARA221. Provides material for management of prehospital emergencies including assessment and management of neurological, behavioral, abdominal, metabolic, geriatric, and multiple trauma patients. The principles of triage, management of mass casualty incidents, and telecommunications are also included. (Sp). Prerequisite: Minimum 2.5 in PARA 221. Co-Requisite Course(s): PARA 232 and PARA 242 and PARA 252 and PARA 262.
PARA222A	Paramedic Medical Trauma IIA	1	The PARA222 modules incorporate previous knowledge gained at the basic EMT level and PARA221. This course is one of five modules which provides material for management of prehospital emergencies as an advanced life support provider. Emphasis in this module is a review of anatomy/physiology, triage, stress management, and rescue operations. (F,Sp,Su). Prerequisite: Minimum 2.5 in PARA 221.
PARA222B	Paramedic Medical Trauma IIB	1	The PARA222 modules incorporate previous knowledge gained at the basic EMT level and PARA221. This course is one of five modules which provides material for management of prehospital emergencies as an advanced life support provider. Emphasis in this module is on infectious disease, poisoning, and environmental emergencies. (F,Sp,Su). Prerequisite: Minimum 2.5 in PARA 221.
PARA222C	Paramedic Medical Trauma IIC	1	The PARA222 modules incorporate previous knowledge gained at the basic EMT level and PARA221. This course is one of five modules which provides material for management of prehospital emergencies as an advanced life support provider. Emphasis in this module is on trauma care including soft tissue injuries and kinematics of trauma. (F,Sp,Su). Prerequisite: Minimum 2.5 in PARA 221.
PARA222D	Paramedic Medical Trauma IID	1	The PARA222 modules incorporate previous knowledge gained at the basic EMT level and PARA221. This course is one of five modules which provides material for management of prehospital emergencies as an advanced life support provider. Emphasis in this module is on medical emergencies specific to G/I and G/U systems and female reproduction.(F,Sp,Su). Prerequisite: Minimum 2.5 in PARA 221.
PARA222E	Paramedic Medical Trauma IIE	1	The PARA222 modules incorporate previous knowledge gained at the basic EMT level and PARA221. This course is one of five modules which provides material for management of prehospital emergencies as an advanced life support provider. Emphasis in this module is on pediatric and neonate care.(F,Sp,Su). Prerequisite: Minimum 2.5 in PARA 221.
PARA231	Paramedic Cardiology I	2	This course provides the paramedic student with information about cardiovascular anatomy, physiology, and electrophysiology. Emphasis is placed on rhythm interpretation, recognition of life threatening arrhythmias, electrical intervention and other prehospital patient management strategies. (F). Prerequisite: Admission to Paramedic Program. Co-Requisite Course(s): PARA 221 and PARA 241 and PARA 251 and PARA 261.
PARA232	Paramedic Cardiology II	2	Builds on information learned in PARA231 as a basis for more advanced arrhythmia interpretation. Management of cardiac arrest including medications, cardioversion, transcutaneous pacing, and defibrillation will be a major emphasis. Pacemakers, 12-lead ECG interpretation, and other advanced procedures, and arrhythmias will be presented. Application of theory, judgment, and decision-making strategies are evaluated. (Sp). Prerequisite: Minimum 2.5 in PARA 231. Co-Requisite Course(s): PARA 222 and PARA 242 and PARA 252 and PARA 262.

COURSE	TITLE	CREDIT HOURS	TEXT
PARA241	Paramedic Pharmacology I	2	Provides the student with information necessary for the preparation, calculation of doses, and administration of drugs used in the prehospital setting, including classification, action, use, and side effects. Information about other commonly prescribed drugs is also provided. (F). Prerequisite: Admission to Paramedic Program. Co-Requisite Course(s): PARA 221 and PARA 231 and PARA 251 and PARA 261.
PARA241A	Paramedic Pharmacology IA	1	One of two modules which provides the student with information necessary for the preparation, calculation of doses, and administration of drugs used in the prehospital setting, including classification, action, use, and side effects. This module focuses on core concepts including routes, calculations, equipment, and standards. (F,Sp,Su). Prerequisite: Acceptance to the Military Medic to Paramedic Program.
PARA241B	Paramedic Pharmacology IB	1	One of two modules which provides the student with information necessary for the preparation, calculation of doses, and administration of drugs used in the prehospital setting, including classification, action, use, and side effects. This module focuses on pharmacokinetics/pharmacodynamics of medications and integration into patient care. (F,Sp,Su). Prerequisite: Acceptance to the Military Medic to Paramedic Program.
PARA242	Paramedic Pharmacology II	2	This course provides the paramedic student with additional in-depth information on Advanced Cardiac Life Support drugs including classification, action, use, and side effects. Information about other commonly used and prescribed drugs is also provided. (Sp). Prerequisite: Minimum 2.5 in PARA 241. Co-Requisite Course(s): PARA 222 and PARA 232 and PARA 252 and PARA 262.
PARA242A	Paramedic Pharmacology IIA	1	One of two modules that provides the paramedic student with additional in-depth information on Advanced Cardiac Life Support drugs including classification, action, use, and side effects. Focus of this module is linking medication with patient condition. (F,Sp,Su). Prerequisite: Minimum 2.5 in PARA 241.
PARA242B	Paramedic Pharmacology IIB	1	One of two modules that provides the paramedic student with additional in-depth information on Advanced Cardiac Life Support drugs including classification, action, use, and side effects. Focus of this module is developing management plans for patient care. (F,Sp,Su). Prerequisite: Minimum 2.5 in PARA 241.
PARA251	Paramedic Skills I	2	Provides introduction of paramedic skills required for advanced life support and provides the opportunity to apply theory to field practice in a discussion and skills lab setting. Skills will be demonstrated, practiced during supervised labs, and tested for competency. Students are also evaluated in the management of simulated emergencies. (F). Prerequisite: Admission to Paramedic Program. Co-Requisite Course(s): PARA 221 and PARA 231 and PARA 241 and PARA 261.
PARA251A	Paramedic Skills IA	1	One of two modules which provides introduction of paramedic skills required for advanced life support and provides the opportunity to apply theory to field practice in a discussion and skills lab setting. Skills will be demonstrated, practiced during supervised labs, and tested for competency. Students are also evaluated in the management of simulated emergencies. Focus in this module is on basic life support skills review/testing/remediation, IV skills, and injections. (F,Sp,Su). Prerequisite: Acceptance to the Military Medic to Paramedic Program.
PARA251B	Paramedic Skills IB	1	One of two modules which provides introduction of paramedic skills required for advanced life support and provides the opportunity to apply theory to field practice in a discussion and skills lab setting. Skills will be demonstrated, practiced during supervised labs, and tested for competency. Students are also evaluated in the management of simulated emergencies. Focus in this module is on advanced airway techniques, cardiac arrhythmias monitoring, and simulations. (F,Sp,Su). Prerequisite: Acceptance to the Military Medic to Paramedic Program.
PARA252	Paramedic Skills II	2	This course is a continuation of Skills I with the introduction of additional skills and continued application of theory. Measurement criteria for skills competencies becomes more stringent and students must become competent in all paramedic skills in preparation for the field internship component. Students are also evaluated in the management of simulated emergencies. (Sp). Prerequisite: Minimum 2.5 in PARA 251. Co-Requisite Course(s): PARA 222 and PARA 232 and PARA 242 and PARA 262.
PARA252A	Paramedic Skills IIA	1	One of two modules which provide continuation of Skills I with the introduction of additional skills and continued application of theory. Measurement criteria for skills competencies becomes more stringent and students must become competent in all paramedic skills in preparation for the field internship component. Students are also evaluated in the management of simulated emergencies. Prerequisite: Minimum 2.5 in PARA 251.
PARA252B	Paramedic Skills IIB	1	This course is a continuation of Skills IIA. Measurement criteria for skills competencies becomes more stringent and students must become competent in all paramedic skills in preparation for the field internship component. Students are also evaluated in the management of simulated emergencies. Prerequisite: Minimum 2.5 in PARA 251.

COURSE	TITLE	CREDIT HOURS	TEXT
PARA261	Paramedic Clinical I	3	Provides clinical experience for paramedic students in areas including nursing home; hospital units such as the emergency department, critical care units, obstetrics, pediatrics, and psychiatric units; and designated EMS agencies under the supervision of licensed paramedics. (F). Prerequisite: Admission to Paramedic Program. Co-Requisite Course(s): PARA 221 and PARA 231 and PARA 241 and PARA 251.
PARA261A	Paramedic Clinical IA	1	Provides clinical experience for paramedic students in areas including hospital units such as the emergency department and critical care units. (F,Sp,Su). Prerequisite: Acceptance to the Military Medic to Paramedic Program.
PARA261B	Paramedic Clinical IB	1	Provides clinical experience for paramedic students in areas including obstetrics, pediatrics, and psychiatric units. (F,Sp,Su). Prerequisite: Acceptance to the Military Medic to Paramedic Program.
PARA261C	Paramedic Clinical IC	1	Provides clinical experience for paramedic students in designated EMS agencies under the supervision of licensed paramedics. (F,Sp,Su). Prerequisite: Acceptance to the Military Medic to Paramedic Program.
PARA262	Paramedic Clinical II	3	This course provides clinical experience for paramedic students in areas including hospital units such as emergency departments, critical care units, obstetrics, pediatrics, surgery, and designated EMS agencies under the supervision of licensed paramedics. (Sp). Prerequisite: Minimum 2.5 in PARA 261. Co-Requisite Course(s): PARA 222 and PARA 232 and PARA 242 and PARA 252.
PARA262A	Paramedic Clinical IIA	1	This course provides clinical experience for paramedic students in areas including hospital units such as emergency departments, and designated EMS agencies under the supervision of licensed paramedics. Prerequisite: Minimum 2.5 in PARA 261.
PARA262B	Paramedic Clinical IIB	1	This course provides clinical experience for paramedic students in areas including hospital units such as critical care units, surgery, and designated EMS agencies under the supervision of licensed paramedics. Prerequisite: Minimum 2.5 in PARA 261.
PARA262C	Paramedic Clinical IIC	1	This course provides clinical experience for paramedic students in areas including hospital units such as obstetrics, pediatrics, and designated EMS agencies under the supervision of licensed paramedics. Prerequisite: Minimum 2.5 in PARA 261.
PARA263	Paramedic Internship	4	This course provides a field internship component with an advanced life support agency. Students are assigned to a paramedic training officer to provide total patient care and other professional duties under direct supervision with continuous evaluation of the student's progress. Oversight is provided by the program clinical coordinator and program director. (Su). Prerequisite: Minimum 3.0 in (PARA 221 and PARA 231 and PARA 241 and PARA 251 and PARA 261).
PFAQ100	Swimming: Primary Skills	1	It's never too late to learn how to swim! This is an introductory swimming course which focuses on the development of basic swimming strokes, rhythmic breathing, survival swimming and beginning diving skills. (F,Sp,Su). Prerequisite: None.
PFAQ101	Swimming: Stroke Development	1	After learning the introductory skills, students will learn front crawl and backstroke. Students will be introduced to the back crawl, breaststroke and butterfly with a strong concentration on rhythmic breathing. (F,Sp,Su). Prerequisite: None. Recommended: PFAQ 100.
PFAQ104	Swimming/Training	1	This course will help increase cardiovascular fitness, strength and endurance through daily swimming workouts similar to competitive swimming. The student should be able to swim 500 yards in 15 minutes. (F,Sp,Su). Prerequisite: None. Recommended: Swim 500 yards in 10 minutes.
PFAQ106	Water Walking/Toning	1	Utilizing different walking and running moves in shallow and deep water will enhance cardiovascular fitness. Strengthening exercises for arms, abdominals and legs are used extensively. Students will learn about muscle groups and their function and how a water workout benefits them. Slow-sustained moves are emphasized. (F,Sp,Su). Prerequisite: None.
PFAQ107	Water Exercise I	1	Water Exercise is exercise without wear and tear on the body. Using the natural resistance of the water is an enjoyable way to get or stay in shape. Swimming skills are not necessary to share in the benefits of flexibility, muscular toning and cardiovascular fitness. (F,Sp,Su). Prerequisite: None.
PFAQ110	Hydro-Fit Exercise I	1	Incredibly versatile, Hydro-Fit buoyancy and resistance equipment offers the student a new level of strength, endurance and aerobic conditioning. Exercises focus on upper-body as well as lower-body development. It is an intermediate/advanced workout with deep water work. (F,Sp,Su). Prerequisite: None. Course Note: Deep water confidence preferred.

COURSE	TITLE	CREDIT HOURS	TEXT
PFAQ111	Hydro-Fit Exercise II	2	This is a water fitness program using water resistance to tone and strengthen muscles, develop coordination and increase flexibility by utilizing Hydro-Fit exercise equipment. Emphasis is placed on increasing abdominal, shoulder, arm and lower-body strength. It is an intermediate/advanced workout with deep water work. (F,Sp,Su). Prerequisite: None. Recommended: PFAQ 110. Course Note: Deep water confidence preferred.
PFAQ112	Scuba	2	This is a beginning Scuba class that consists of classroom and pool training. Upon successful completion of this class the student will have the necessary academic knowledge and water skills to be eligible for the Open Water Scuba Certification class. (F,Sp). Prerequisite: None. Course Note: Students must supply their own equipment.
PFAQ114	Parent/Infant Water Adjustment	0.5	This course places emphasis on parent/infant water adjustment, safety and fun with social skill development. Emphasis is placed on development of water experience and improvement of motor skills and coordination. (Infants ages between 6 months to 2 years.) (F,Sp). Prerequisite: None. Course Note: For children between the ages of 6 months and 2 years.
PFAQ115	Parent/Toddler Water Adjustmnt	0.5	This course places emphasis on parent/toddler water adjustment, skill development, safety and fun with social interactions. Emphasis is on development of water experiences, improvement of motor development, coordination and social skills. Toddlers should be 2 to 5 years old, depending upon skill development and/or have instructor approval. (F,Sp). Prerequisite: None. Recommended: PFAQ 114. Course Note: Toddlers should be 2-5 years old, depending upon skill development and/or instructor approval.
PFAQ118	Arthritis Found Aquatics Prog	1	A warmer pool allows the student greater range of motion. Exercises will help maintain, or even improve flexibility. (F,Sp). Prerequisite: None. Course Note: Arthritis Foundation Association approved program.
PFAQ120	Basic Lifeguarding	1	This course is designed to provide the necessary minimum skills of training to qualify as an entry-level lifeguard. (F,Sp). Prerequisite: None.
PFAQ122	Water Safety Instruction	2	This course is designed to assist in teaching basic aquatic skills for instructors. Teaching modalities and how different students learn is covered. (F,Sp). Prerequisite: None.
PFDA142	Ballroom Swing I	1	Introduction to the study of ballroom swing including partnership technique, dance posture, basic patterns, music and style of the Swing dances. Includes introduction to dances using different styles and speeds of music such as East Coast swing, West Coast swing, jitterbug, and jive. Enrollment with a partner is strongly recommended. (F,Sp,Su). Prerequisite: None. Recommended: Enrollment with a partner. Course Note: A non-credit option is available for this class at the special rate of \$129, course fees included. See the NCCE 700 listing (CRN 23506) in the Community and Continuing Education section.
PFDA147	Latin Ballroom I	1	This credit course includes an introduction to partnership technique, dance posture, basic patterns and music for Latin partnership dancing. Dances will be selected from the following: cha-cha, rumba, mambo, merengue, salsa, samba, and tango. Enrollment with a partner is strongly recommended. (F,Sp,Su). Prerequisite: None. Recommended: Enrollment with a partner is strongly recommended. Course Note: Cost of this course is \$129. A non-credit option is also available for Personal Interest students. See the NCCE 700 listings in the Community and Continuing Education Offerings.
PFDA152	Latin Ballroom II	1	This course is designed to build on the techniques introduced in Latin Ballroom I, Ballroom I, Ballroom Swing I, or Ballroom Topics. Emphasis will be placed on the following dance styles: cha-cha, rumba, mambo, samba, salsa, merengue, and tango. Enrollment with a partner is strongly recommended. (F,Sp,Su). Prerequisite: None. Recommended: PFDA 147, and enrollment with a partner. Course Note: A non-credit option is available for this class at the special rate of \$129, course fees included. See the NCCE 700 listing (CRN 23508) in the Community and Continuing Education section.
PFFT100	Total Fitness A-Fitness	2	Total Fitness A encompasses fitness, nutrition, health, and wellness principles, with emphasis on physical fitness, including cardiovascular fitness, strength and flexibility. Students will complete an assessment measuring aerobic fitness, strength, and flexibility. With instructor supervision, students will develop and participate in a personal exercise plan. Course features flexibility of attendance. (F,Sp,Su). Prerequisite: None. Course Note: May attend downtown or west campus facility. Cannot be taken during the same semester with PFFT 101, PFFT 102, PFFT 103 or PFFT 109.

COURSE	TITLE	CREDIT HOURS	TEXT
PFFT101	Total Fitness B-Nutrition	2	Total Fitness B encompasses fitness, health, and wellness principles with emphasis on nutrition and healthy eating choices. Students will complete a physical fitness assessment and develop and participate in a personal exercise plan. A food journal and healthy meal planning will be included. The course features flexibility of attendance. (F,Sp,Su). Prerequisite: None. Course Note: May attend downtown or west campus facility. Cannot be taken during the same semester with PFFT 100, PFFT 102, PFFT 103 or PFFT 109.
PFFT102	Total Fitness C-Weight Control	2	Total Fitness C encompasses fitness, health, and wellness principles with an emphasis on weight management: loss, gain or maintenance. Students will complete a physical fitness assessment. Students will develop and participate in a personal exercise plan. Daily food journal will be included. The course features flexibility of attendance. (F,Sp,Su). Prerequisite: None. Course Note: May attend downtown or west campus facility. Cannot be taken during the same semester with PFFT 100, PFFT 101, PFFT 103 or PFFT 109.
PFFT103	Total Fitness D-Life Fitness	2	Total Fitness D encompasses fitness, health, and wellness principles with emphasis on lifelong fitness. Students will complete a physical fitness assessment and will develop a personal exercise plan. Students will choose and participate in fitness and recreational activities in the community. The course features flexibility of attendance. (F,Sp,Su). Prerequisite: None. Course Note: May attend downtown or west campus facility. Cannot be taken during the same semester with PFFT 100, PFFT 101, PFFT 102 or PFFT 109.
PFFT104	Therapeutic Massage Fitness Lab	1	This course is designed for students in the Therapeutic Massage Program. The emphasis is on general fitness (cardiovascular, flexibility, muscle strength and endurance), as well as specific exercises related to massage therapy skills. General wellness principles are addressed during this course. (F,Su). Prerequisite: None. Restriction: Therapeutic Massage Student. Co-Requisite Course(s): PFW 163.
PFFT107	Jogging: Beginning	1	This course introduces jogging as a fitness modality and covers how to care for feet, proper equipment choices, clothing, and safety. (F,Sp,Su). Prerequisite: None.
PFFT109	Introduction to Fitness	1	Introduction to Fitness is designed to introduce general fitness and wellness concepts to students. With supervision of an instructor, students will develop and participate in exercise plans tailored to their individual needs. This course features flexibility of attendance and modular teaching. (F,Sp,Su). Prerequisite: None. Course Note: PFFT 109 is an open workout class. Course Manual MUST be purchased at Hole in the Wall in the Gannon Building, Room 133, prior to orientation. ALL STUDENTS MUST ATTEND A 50 MINUTE ORIENTATION during the first week of the semester. Log on to http://www.lcc.edu/pfw and select Facilities for detailed Orientation schedule. May attend this course at downtown campus or west campus. This course cannot be taken during the same semester with PFFT 100, PFFT 101, PFFT 102 or PFFT103.
PFFT110	Exercise & Learning Readiness	1	This class is for students wishing to increase their learning readiness for the day. Research shows exercise activates the learning center of the brain. Workout first and go to class attentive and ready to learn. Emphasis on aerobic fitness, muscular strength, flexibility and nutrition. (F,Sp,Su). Prerequisite: None. Course Note: New Class--Research shows exercise activates the learning center of the brain. Workout first and then go to class attentive and ready to learn. Emphasis on aerobic fitness, muscular strength, flexibility and healthy breakfasts.
PFFT111	Aerobic Boxing	0.5	This course will teach the art of self-defense while improving your aerobic and anaerobic capacity. (F,Sp,Su). Prerequisite: None.
PFFT113	Core Strength & Flexibility Trng	1	This course combines core training and flexibility exercises. Students will use calisthenics and floor exercises to improve muscle strength, increase flexibility, and develop core strength (back and abdominal muscles). Proper flexibility techniques and exercises will be emphasized. Students will experience a total body workout utilizing all major muscle groups. (F,Sp,Su). Prerequisite: None.
PFFT114	Advanced Circuit Training	2	This course is designed to incorporate strength conditioning, muscle endurance, flexibility, and cardiovascular training for a total body workout. This can be accomplished in a relatively short time frame by utilizing the circuit training method. (F,Sp,Su). Prerequisite: None.
PFFT115	Nordic Walking	1	This course is designed to improve cardiovascular fitness through walking, specifically with the use of Nordic walking poles. The benefits include burning 30-40% more calories than regular walking, along with increasing upper body strength and reducing impact on hips, knees, ankles, and feet. Pedometers will also be used. (F,Sp). Prerequisite: None.

COURSE	TITLE	CREDIT HOURS	TEXT
PFFT119	Fire Academy Fitness Training	3	This course provides Fire academy students with techniques and practice to improve and maintain a high degree of physical fitness necessary to meet the demands of their profession. (F,Sp). Prerequisite: Admission to Fire Academy. Co-Requisite Course(s): FIRE 101 and FIRE 102.
PFFT120	Aerobic Exercise	2	This course helps students to improve cardiovascular function and oxygen efficiency to enhance muscle structure and function through toning exercises, aerobic dancing, and stretching. (F,Sp,Su). Prerequisite: None.
PFFT122	Step Aerobics	2	This course helps students improve cardiovascular efficiency through the use of step platforms. Movement combinations with increasing complexity will be used to increase student's balance and coordination. Toning and stretching exercises will be used to complete muscle balancing and flexibility. Educational material will be distributed to increase student's knowledge of fitness and wellness to improve personal quality of life. (F,Sp,Su). Prerequisite: None.
PFFT134	Mind/Body Fitness-Nia Techniq	1	Nia blends self expressive, simple movements from martial arts, dance arts and healing arts for balanced conditioning. Nia empowers students to achieve physical, mental, and emotional well being through a safe cardiovascular exercise approach. Nia is designed to connect students to their inner rhythm through greater body awareness. (F,Sp,Su). Prerequisite: None.
PFFT136	Dance Exercise	1	This course includes warm-ups and exercise from various dance genres including ballet, modern, jazz, urban line, and country line, designed to develop flexibility, strength, and coordination. (F,Sp,Su). Prerequisite: None.
PFFT147	Basketball Fitness Training	2	This course is not a traditional basketball class. Participants will be in a workout class that will have an emphasis on conditioning using basketball drills and basketballs. Class activities will include running, continuous movement, shooting, defensive slides, and dribbling. (F,Sp). Prerequisite: None.
PFFT169	Fit for Life Exercise	1	This course introduces the older student to the benefits and importance of a regular exercise program to combat the debilitating effects which inactivity has upon aging. The student will learn the benefits of cardiovascular exercise as well as flexibility, mobility, and range of motion. (F,Sp). Prerequisite: None.
PFFT170	Yoga: Beginning	1	This course is an introduction to yogic breathing and yogic stretching exercises with emphasis on relaxation and meditation. Yoga postures will be utilized to reduce stress and tension. (F,Sp,Su). Prerequisite: None.
PFFT171	Yoga: Continuing	1	This course promotes psycho-physical integration of body and mind through yogic breathing, stretching, and relaxation. Guided breathing and visualization are used to enhance depth and quality of relaxation and meditation. (F,Sp,Su). Prerequisite: None. Recommended: PFFT 170.
PFFT180	Seminar: Special Subjects	0 to 6	Seminars are designed to meet specific community needs. (F,Sp,Su). Prerequisite: None.
PFFT261	Adult Fitness/Cardiac Rehab Ex	2	This course includes medically-monitored exercise and health education, and provides opportunities for students to maintain and/or improve their fitness level through supervised aerobic exercise sessions. The course is designed for adults with heart disease as well as for adults without heart disease working to stay physically fit. Course allows continuous enrollment. (F,Sp,Su). Prerequisite: Department Approval. Course Note: Continuous enrollment allowed.
PFHW100	Health and Wellness Seminar	.5 to 4	This course introduces the student to 8 hours of various topics related to health awareness, wellness, and/or prevention of lifestyle-related illness. (F,Sp,Su). Prerequisite: None.
PFHW105	Medical Altern for Hlth & Wlns	2	This course discusses alternatives in maintaining health and correcting illness. The students will examine the six major medical systems, as well as many alternative therapies from around the world. (F,Sp). Prerequisite: None.
PFHW123	Human Nutrition	3	An introductory course in human nutrition. Topics include digestion, absorption, metabolism, and biological functions of nutrients; nutrition needs throughout the life cycle; relationship of nutrition and eating patterns to health and disease; individual and societal influences on food choices; and the role of government in food safety and security. (F,Sp,Su). Prerequisite: Reading Level 5. Recommended: Biology.

COURSE	TITLE	CREDIT HOURS	TEXT
PFHW163	Healthy Lifestyles	2	This course introduces the student to lifestyle skills that lead to better health. The student will learn healthy nutritional habits, basic fitness concepts, positive stress reduction, and development of a personalized healthy lifestyle plan. Assessment skills and wellness concepts will be put into practice. (F,Sp,Su). Prerequisite: Reading Level 5 and Writing Level 6.
PFHW164	Fire Science Healthy Lifestyle	3	This course introduces students to lifestyle skills that lead to better health. The student will learn healthy nutritional habits, fitness concepts, stress reduction, coping skills for the physical and mental challenges of fire science and develop a personalized healthy lifestyle plan. Fitness and wellness concepts will be demonstrated and practiced. (F,Sp,Su). Prerequisite: Reading Level 5 and Writing Level 6.
PFHW181	Stress Management	1	This course helps students understand the basic components of the stress response and how they limit our physical, mental and emotional well-being. Students learn and apply basic principles that help to resolve stressful situations and lead to greater sense of ease and pleasure in life, work and relationships. (F,Sp,Su). Prerequisite: None.
PFHW190	Wilderness Survival Tech	3	This course provides basic outdoor survival skills and techniques to campers, outdoor enthusiasts, and group leaders. Among the topics are shelter, fire, water, signals, orienteering, food procurement, hot/cold stress management, toxic bites, edible plants of the world, and survival at sea. Optional three-day field trip exercise. (F,Sp,Su). Prerequisite: None. Course Note: There will be an optional three-day field trip exercise at the end of the semester.
PFHW191	Wild Food Plants	3	This course introduces 77 kinds of edible wild plants and their toxic look-a-likes from Michigan and adjoining states. The students learn to distinguish these plants on the basis of observed plant characteristics. The material is illustrated in slides and handouts. Several outdoor experiences are provided. Conservation stressed. (F,Sp,Su). Prerequisite: None.
PFKN105	Psychology of Coaching	1	This course provides a comprehensive introduction to the art and science of coaching, as well as an introduction to the art of positive coaching philosophy. (F,Sp). Prerequisite: None.
PFKN106	Aerobic Instructor Training	3	This course will train the student on how to instruct a safe and effective aerobic fitness class. High and low impact aerobics, step aerobics, and muscle repetition work using light weights and resistance bands will be emphasized. Safe exercise techniques, developing creative choreography, and teaching modifications for special populations will be covered. (F,Sp). Prerequisite: Reading Level 5.
PFKN170	Foundations of Kinesiology	3	This is an introductory professional course in Kinesiology, which examines the multiple aspects of physical education and Kinesiology as a discipline, major, and profession. Sub-disciplines and career options in the field, along with historical perspectives and current issues in physical education, will also be discussed. (F,Sp,Su). Prerequisite: Reading Level 5 and Writing Level 6.
PFKN210	Athletic Training Principles	3	This course is an overview of prevention, management, and rehabilitation as each relates to athletic injury. It also provides an examination of various techniques used for the assessment, treatments, and rehabilitation of athletic injuries. Other topics include legal implications for the athletic trainer, first aid principles, and taping procedures. (Sp). Prerequisite: Reading Level 5 and Writing Level 6. Recommended: Biology.
PFKN250	Measurements in Kinesiology	3	This is an introductory course which examines materials and methods used for assessment and analysis within Kinesiology. Emphasis will be placed on procedures and tools used within the various sub-disciplines. Measurement and evaluation methods will address motor skills, physical fitness, and psychological components associated with physical fitness. (F,Sp). Prerequisite: Reading Level 5 and Writing Level 6 and Math Level 3. Recommended: PFKN 170.
PFKN260	Growth and Motor Behavior	3	This is a fundamental course which investigates the relationship between biological maturation and physical growth as it relates to motor performance and motor skills learning. The course will also cover fundamentals of motor learning, stages of skill acquisition, physical fitness, and motor abilities of children and youth. (F,Sp). Prerequisite: Reading Level 5 and Writing Level 6. Recommended: BIOL 145 or equivalent.

COURSE	TITLE	CREDIT HOURS	TEXT
PFKN270	Personal Trainer Preparation	4	This Personal Trainer Certification preparatory course provides students with the theoretical and practical skills required to take a national certification exam in order to enter the profession of personal training. Focal topics include basic human anatomy, exercise physiology, nutrition, exercise programming, client assessment, injury prevention, legal issues, and business management. (F,Sp,Su). Prerequisites: Reading Level 5 and Writing Level 6 and Math Level 4. Recommended: BIOL 201 and BIOL 202 for Kinesiology majors; or Anatomy and Exercise Physiology proficiency equivalent to BIOL 145 for non-Kinesiology majors.
PFKN280	Kinesiology Internship	3	This course provides students the opportunity to apply acquired academic knowledge and practical skills in a Kinesiology related worksite location. A minimum of 108 worksite hours are required. In addition, lecture topics will include workplace etiquette, professionalism, mentorship, diversity, time management, ethical and legal issues.(F,Sp,Su). Prerequisite: Department Approval is required for worksite location and intern responsibilities.
PFKN295	Ind Study in Physical Fitness	.5 to 4	An opportunity for self-directed learners to explore topics related to, but not taught in the curriculum. Students spend at least two hours per week for each credit. A detailed proposal must be submitted by the student for approval by the Department and supervising instructor prior to registration. (F,Sp,Su). Prerequisite: None.
PFSP100	Aikido	1	This course is an introduction to the philosophy of Aikido. Basic movements of Aikido as a martial art are introduced. (F,Sp). Prerequisite: None.
PFSP102	Basketball: Beginning	1	This course introduces the student to the fundamental skills of basketball. Course emphasis is placed on ball handling, passing, shooting, and rules. (F,Sp). Prerequisite: None.
PFSP103	Basketball: Advanced	1	This course is designed for the student who has a sound understanding of basketball skills. Drills will be used to enhance passing and shooting skill development. Emphasis is placed on team play as well as individual skill improvement. (F,Sp). Prerequisite: None. Recommended: PFSP 102.
PFSP104	Bicycling Camping/Touring	1	This is a one weekend class held in scenic Michigan. The class will consist of two days of road riding and two nights of camping. Transportation to the course location will be provided by an LCC van. (F,Sp,Su). Prerequisite: None. Course Note: A pre-course meeting is required; to be scheduled by instructor post registration. Base camp will be set up and day trips will be taken each day from base camp. Required equipment: bike, helmet, and camping equipment. A non-credit option is available for this class at the special rate of \$129, course fees included. See the NCCE 700 listing (CRN 23509) in the Community and Continuing Education section.
PFSP105	Bowling: Beginning	1	This credit course is a basic introduction to bowling. Primary emphasis is placed on spot bowling, release, and approach. Students become familiar with bowling etiquette and scoring. (F,Sp,Su). Prerequisite: None. Course Note: Cost of this course is \$129 plus a fee of \$1.75 per game (shoes are free). A non-credit option is also available for Personal Interest students. See the NCCE 700 listings in the Community and Continuing Education Offerings.
PFSP106	Bowling: Advanced	1	This course is an extensive review of skills introduced at the beginning level. Students develop strategies in lane reading. (F,Sp,Su). Prerequisite: None. Recommended: PFSP 105. Course Note: Students must have at least an average score of 150. Fees: \$1.75 per game (shoes are free). A non-credit option is available for this class at the special rate of \$129, course fees included. See the NCCE 700 listing (CRN 23511) in the Community and Continuing Education section.
PFSP107	Fencing: Beginning	1	This course is designed to introduce the student to basic skills and theories in foil fencing. Course emphasis is placed on basic skills such as advance, retreat, lunge, disengage, coupe', one-two double', riposte, counter parry and riposte, and advance-lunge. Group instruction is used. (F,Sp). Prerequisite: None.
PFSP108	Fencing: Intermediate	1	This course builds upon the 12 basic fencing skills and introduces rules and complex fencing movements. Students will use acquired skills in fencing bouts. (F,Sp). Prerequisite: Minimum 2.0 in PFSP 107.
PFSP109	Golf: Beginning	1	This course is an introduction to the basics of golf which include equipment, grip, stance and posture, club swing, and the rules and etiquette of golf. (F,Sp,Su). Prerequisite: None.
PFSP110	Golf: Intermediate	1	This course will review the basics of golf: equipment, grip, stance and posture, and club swing. Students will be given drills to foster and improve proper swing mechanics for course play. (F,Sp,Su). Prerequisite: None. Recommended: PFSP 109.

COURSE	TITLE	CREDIT HOURS	TEXT
PFSP111	Indoor Soccer	1	This credit course is designed to introduce students to the basics of indoor soccer. Passing and shooting drills are emphasized along with team play. Modifications to soccer rules are used to accommodate indoor soccer rules. (F,Sp,Su). Prerequisite: None. Course Note: Cost of this course is \$129. Uses Community and Continuing Education refunding rules. If you have any questions, call Community and Continuing Education at (517)483-1860.
PFSP112	Judo: Beginning	1	This course is designed to familiarize students with basic Judo techniques of falling, throwing, and grappling. (F,Sp,Su). Prerequisite: None.
PFSP113	Judo: Intermediate	1	This course works toward a series of sequential Judo movements with continued emphasis on throwing and grappling. (F,Sp). Prerequisite: None. Recommended: PFSP 112.
PFSP114	Karate: Beginning	1	This course introduces the basic skills of karate: kicking with the feet and knees, and punching with the fist and hands. (F,Sp,Su). Prerequisite: None.
PFSP115	Karate: Intermediate	1	This course further develops karate skills in punching with the fists and hands, kicking with feet and knees, and essential body movement in combative activities with an emphasis on free sparring. (F,Sp,Su). Prerequisite: None. Recommended: PFSP 114.
PFSP116	Karate: Advanced	1	This course places primary emphasis on the development of sparring techniques as they relate to punching and kicking. Students spar and move toward the competitive aspect of karate as a martial art. (F,Sp,Su). Prerequisite: None. Recommended: PFSP 114 or PFSP 115.
PFSP117	Pool: Beginning	1	This course introduces students to the fundamentals of pool (pocket billiards). Primary course emphasis is on stance, grip, bridge, aim, and stroke. Cue ball position shots such as stop, follow, draw, and center are covered. (F,Sp). Prerequisite: None. Course Note: Cost of this class is \$149. Uses CCE Refunding Rules. A non-credit option is available for Personal Interest students at the special rate of \$129. See the NCCE 700 listing (CRN 23516) in the Community and Continuing Education section. .
PFSP118	Pool: Intermediate	1	This course reviews the fundamentals of stance, grip, bridge, aim, and stroke. Skill improvement and concentration techniques are stressed. (F,Sp). Prerequisite: None. Course Note: Cost of this class is \$149. Uses CCE refunding rules. A non-credit option is available for Personal Interest students at the special rate of \$129. See the NCCE 700 listing (CRN 23517) in the Community and Continuing Education section.
PFSP122	Tai Chi I	1	This course introduces the first 30 forms of the Yang-style Tai Chi. Students develop techniques to focus on relaxation and inner calmness. (F,Sp). Prerequisite: None.
PFSP123	Tai Chi II	1	This course covers more difficult forms in Tai Chi. Yang-style Tai Chi stresses the health and well-being of the whole person. Yang-style movements allow students to move in slow, smooth, steady, and continuous movement. (F,Sp). Prerequisite: None. Recommended: PFSP 122.
PFSP124	Tennis: Beginning	1	This course will introduce the student to the following skills: ground strokes, serve, volley, lob, and overhead serving as well as doubles and singles strategy. (F,Sp). Prerequisite: None. Course Note: Tennis shoes required (no black-soled shoes).
PFSP125	Tennis: Intermediate	1	This course will introduce the student to the lob, half volley, and a number of different serves. The student should be able to demonstrate and execute the fundamentals of tennis: ground strokes, net volley, serve, and the knowledge of scoring the game. (F,Sp). Prerequisite: None. Recommended: PFSP 124. Course Note: Tennis shoes required (no black-soled shoes).
PFSP126	Volleyball: Beginning	1	This course introduces the student to the fundamental skills of volleyball. Course emphasis is on proper serving, setting, forearm passing, spiking, positioning, rules, and game strategy. (F,Sp). Prerequisite: None.
PFSP127	Competitive Volleyball	1	This course provides the student with a conceptual framework for advanced offensive and defensive systems of volleyball. Individuals work on skill drills and intra-class competition. (F,Sp). Prerequisite: None. Recommended: PFSP 126.
PFSP130	Judo: A to Z (Kata)	1	This course is designed to provide beginning Judo students with comprehensive instruction in basic Judo techniques as well as experiences in learning portions of Kodokon Kata (Nage-no-kata, Katame-no-kata, Juno-kata, Goshin Jutsu). The emphasis is on the art of Judo. (Su). Prerequisite: None.

COURSE	TITLE	CREDIT HOURS	TEXT
PFWT112	Intro to Weight Training	1	This basic resistance (weight) training course is designed to introduce resistance training and proper lifting techniques to students. Safety rules, proper use of equipment, and concepts of lifting will be emphasized. (F,Sp,Su). Prerequisite: None.
PFWT123	Weight Training I	2	This course is designed to promote physical fitness through progressive resistance (weight) training. Instruction will include principles, methods and techniques of resistance training. Using this material, students will design their own program with emphasis on muscle strengthening, muscle endurance and weight reduction. Principles of proper body mechanics will be applied. (F,Sp,Su). Prerequisite: None.
PFWT124	Weight Training II	2	This course expands students' knowledge of progressive resistance (weight) training, (using both free weights and machines), thus increasing the variety and methods of training techniques. Students will monitor their food intake throughout the semester, further developing an understanding of the impact of appropriate dietary habits on resistance training. (F,Sp,Su). Prerequisite: None. Recommended: PFWT 112 or PFWT 123.
PHIL151	Intro to Logic & Critical Think	4	Introduction to modern logic and elements of reasoning, with special attention given to the roles of language in reasoning, distinguishing deductive from inductive arguments, recognizing levels of meaning and differing world views (Weltanschauungen), analyzing truth-functional relations, avoiding fallacious reasoning or misleading language, and using logical skills in everyday life. (F,Sp,Su). Prerequisite: Reading Level 5.
PHIL152	Introduction to Ethics	4	Designed to explore essential requirements for moral reasoning and to call attention to both the factual foundation as well as the traditional criteria utilized for value judgments. Major ethical theories will be discussed, along with their applications to everyday situations. The course will include cross-cultural references, when appropriate. (F,Sp,Su). Prerequisite: Reading Level 5.
PHIL153	Knowledge and Reality	4	Select issues from classical and contemporary philosophy provide an introduction to differences between knowledge and opinion, ways of supporting knowledge claims, and the relationship between the knower and what exists. (F). Prerequisite: Reading Level 5.
PHIL211	Philosophy: Ancient & Medieval	4	Surveys major developments in theories of knowledge, reality, ethics, and society, and their historical role in shaping cultures and human identity. Covers Chinese, Indian, Greek, Roman, Christian, Islamic, and European thought from mythic beginnings to the period of early scientific reasoning. (F,Sp). Prerequisite: Reading Level 5 and Writing Level 6. Recommended: WRIT 121 or WRIT 131.
PHIL212	Philosophy: Modern & Contemptry	4	Surveys major developments in theories of knowledge, reality, ethics, and society, and their historical role in shaping cultures and human identity. Covers European, Asian, African, Native American, and American pragmatic thought from the scientific revolution to contemporary global concerns. (Sp). Prerequisite: Reading Level 5 and Writing Level 6. Recommended: WRIT 121 or WRIT 131.
PHIL260	Contemporary Ethical Problems	4	This is an advanced course designed to examine contemporary moral issues which arise through technological and social developments. It will explore the limits of traditional ethical theories and/or their possible adaptation to a changing world. Where appropriate, course includes issues of cross-cultural importance which involve multinational concerns. (Sp). Prerequisite: Reading Level 5 and Writing Level 6.
PHIL295	Ind Study in Philosophy	1 to 4	An opportunity for self-directed learners to explore topics related to, but not taught in the curriculum. Students spend at least two hours per week for each credit. A detailed proposal must be submitted by the student for approval by the Department and supervising instructor prior to registration. (F,Sp,Su). Prerequisite: Department Approval.
PHOT101	Basic Photo for Non-Majors	2	Students will learn to use camera controls, photographic composition, and lighting to make better photographs. Digital capture (the student's own computer will be used). Designed for students with little or no previous still photography experience who do not plan to major in imaging technology. (F,Sp,Su). Prerequisite: None. Course Note: A digital camera is required.
PHOT111	Digital Photography I	4	An introduction to photographic technology on both a theoretical and practical level. The student will learn camera types and related equipment, exposure controls, creative controls, and beginning and intermediate digital darkroom skills including correcting and enhancing digital images and preparing files for output on printing devices using image editing. This course is the introductory course in the Photographic Imaging Technology Program. (F,Sp,Su). Prerequisite: Reading Level 3 and Writing Level 2 and Math Level 3. Course Note: This course is the first course in the Photography Degree sequence and also may be taken for personal interest. A manually-adjustable Digital SLR is required. See official syllabus. To finish an Associate's Degree or Certificate in Photography in the shortest possible time, you must enroll in PHOT 111, PHOT 112, PHOT 113, and ARTS 102 in your first semester.

COURSE	TITLE	CREDIT HOURS	TEXT
PHOT112	Digital Imag for Photographers	4	An introduction to the capture, processing and manipulation of digital photographic images using image editing software. Students will learn to scan, capture, correct and enhance digital images and prepare files for output on black and white and color printing devices. Introduces students to theories, terminology, and applications of digital imaging technologies. (F,Sp). Prerequisite: Minimum 2.0 in PHOT 111 or concurrently and Reading Level 3 and Writing Level 2 and Math Level 3. Course Note: A manually-adjustable Digital SLR camera is required. See official syllabus.
PHOT113	Lighting Concepts and Applic	3	Introduces the student to the fundamental concepts of photographic lighting for image capture in the studio and on location. Students will learn to apply their knowledge by identifying and solving common photographic lighting problems. Students will use professional continuous lighting equipment to produce images. (F,Sp). Prerequisite: Minimum 2.0 in PHOT 111 or concurrently and Reading Level 3 and Writing Level 2 and Math Level 3. Course Note: A manually-adjustable Digital SLR camera is required. See official syllabus.
PHOT114	Advanced Photographic Imaging	4	An advanced level study in the capture, processing and manipulation of digital photographic images using image editing software. Students will be introduced to contemporary color photographic imaging processes and materials. Learners will apply color management and color image design principles in the production of professional-level color photographic images. (F,Sp). Prerequisite: Minimum 2.0 in (ARTS 102 and PHOT 111 and PHOT 112 and PHOT 113) and Reading Level 5 and Writing Level 2 and Math Level 3. Course Note: A manually-adjustable Digital SLR camera is required. See official syllabus.
PHOT117	Digital Photography II	4	Students will learn intermediate and advanced digital imaging exposure, image processing, and output controls and techniques. Students will acquire knowledge and skills to solve technical, aesthetic, and communication problems. Students will learn black and white inkjet printing techniques. (F,Sp). Prerequisite: Minimum 2.0 in (PHOT 111 and PHOT 112) and Reading Level 3 and Writing Level 2 and Math Level 3. Course Note: A manually-adjustable Digital SLR camera is required. See official syllabus.
PHOT118	Visual Literacy	2	An introduction to the basic theories of visual communication and how photographic images are and have historically been used as a language to disseminate information. Learners will explore the history and contemporary use of the photographic image and will create work in the style of a particular period or photographer. (Sp). Prerequisite: Minimum 2.0 in (ARTS 102 and PHOT 111 and PHOT 112 and PHOT 113) and Reading Level 3 and Writing Level 2 and Math Level 3.
PHOT119	Intermediate Lighting	3	An exploration of intermediate lighting theories, practices and techniques. This course emphasizes the use and control of natural light and electronic flash as applied to people, locations and advanced studio settings. (F,Sp). Prerequisite: Minimum 2.0 in (PHOT 111 and PHOT 113) and Reading Level 3 and Writing Level 2 and Math Level 3. Course Note: A manually-adjustable Digital SLR camera is required. See official syllabus.
PHOT191	Photo Imaging Special Topics	1 to 3	Photo Imaging Special Topics will be offered for intermediate and advanced photographic students. Topics will cover a broad range of subjects related to photographic imaging and related fields. (F,Sp,Su). Prerequisite: Determined by Section.
PHOT212	Commercial Illustration Photo	3	Students will learn the technical requirements to produce professional photographic illustrations and will use appropriate tools and techniques to produce professional photographic illustrations. Student will be introduced to appropriate large format and/or medium format technologies as applied to professional photographic illustration. (F). Prerequisite: Minimum 2.0 in (PHOT 114 and PHOT 117 and PHOT 119) and (minimum 2.0 in PHOT 215 or concurrently) and Reading Level 5 and Writing Level 2 and Math Level 3.
PHOT213	Portrait Photography	3	Introduces students to the techniques and technologies associated with professional portrait photography. Students will work in areas directly linked to the technical and expressive elements of portrait photography including proper lighting techniques and digital retouching methods. (F). Prerequisite: Minimum 2.0 in (PHOT 114 and PHOT 117 and PHOT 119) and (minimum 2.0 in PHOT 215 or concurrently) and Reading Level 5 and Writing Level 2 and Math Level 3. Course Note: A manually-adjustable Digital SLR camera is required. See official syllabus.
PHOT214	Photojournalism	2	This course introduces students to techniques and practices of photojournalism, documentary photography, and public relations photography. (F). Prerequisite: Minimum 2.0 in (PHOT 114 and PHOT 117 and PHOT 119) and (minimum 2.0 in PHOT 215 or concurrently) and Reading Level 5 and Writing Level 2 and Math Level 3. Course Note: A manually-adjustable Digital SLR camera is required. See official syllabus.

COURSE	TITLE	CREDIT HOURS	TEXT
PHOT215	Digital Color Management/Print	2	Students will apply color management, color correction, image enhancement techniques, and digital lab efficiency to professionally prepare their photographic images. Students will also produce professionally acceptable prints using digital color output devices, processes, and materials.(F,Sp). Prerequisite: Minimum 2.0 in PHOT 114 and PHOT 117 and Reading Level 5 and Writing Level 2 and Math Level 3.
PHOT228	Independent Study	1 to 3	Students will apply critical thinking processes and digital photographic imaging technologies to produce a body of work illustrating their area(s) of special interest. (F,Sp,Su). Prerequisite: Minimum 2.0 in PHOT 117 and Approved Proposal and Reading Level 3 and Writing Level 2 and Math Level 3.
PHOT232	Internship	3	This course allows advanced students to work as intern developing competencies in the technical, business, creative, and communicative aspects of photography and digital imaging. An acceptable application and internship agreement is required prior to registration. (F,Sp,Su). Prerequisite: Minimum 2.0 in PHOT 117 and Approved Internship Agreement and Department Approval and Reading Level 3 and Writing Level 2 and Math Level 3.
PHOT270	Busn Issues for Photography	3	This course exposes the student to the general business practices and approaches used in the photographic marketplace including small business management, copyright, marketing and legal issues. (Sp). Prerequisite: Minimum 2.0 in (PHOT 212 and PHOT 213 and PHOT 214 and PHOT 215) and Reading Level 5 and Writing Level 2 and Math Level 3.
PHOT280	Advanced Projects	2	Students will apply critical thinking processes and digital photographic imaging technologies to produce a body of work illustrating their area(s) of special interest. (Sp). Prerequisite: Minimum 2.0 in (PHOT 212 and PHOT 213 and PHOT 214 and PHOT 215) and (minimum 2.0 in PHOT 290 or concurrently) and Reading Level 5 and Writing Level 2 and Math Level 3. Course Note: A manually-adjustable Digital SLR camera is required. See official syllabus.
PHOT290	Porfolio Assembly	3	This is a concluding course for the Photographic Imaging Technology program associate degree. This course finalizes the student's portfolio and immediate career plans. Students edit and assemble their best work into a cohesive, visual resume in order to secure employment or gain admission to another institution for continued studies. (Sp). Prerequisite: Minimum 2.0 in (PHOT 212 and PHOT 213 and PHOT 214 and PHOT 215) and (minimum 2.0 in PHOT 270 and PHOT 280 or concurrently) and Reading Level 5 and Writing Level 2 and Math Level 3.
PHYS120	The Art of Physics	4	This course reveals the wonders of the physical universe by giving students a basic understanding of motion, forces, acoustics and optics. Designed for students in the Humanities; Art, Design & Multimedia; other non-science areas, or sonography. Extensive hands-on activities and laboratory exercises supplement the lecture. (F,Sp,Su). Prerequisite: Reading Level 5 and Writing Level 6 and (Math Level 5 or MATH 107 concurrently).
PHYS200	Intro Physics With Application	4	The basic principles of force, work, rate, resistance, energy waves and power are applied to four systems: mechanical (linear and rotational), fluid (liquid and gases), electrical and thermal systems using unifying concepts through mathematical expressions. Activities and experiments explore physics behind real-world applications. (F,Sp). Prerequisite: Reading Level 5 and Writing Level 6 and Math Level 4.
PHYS221	Introductory Physics I	4	First semester of algebra-based physics with laboratory, presents the fundamental principles of physics, with applications. Topics in mechanics include one and two dimensional kinematics, forces, energy and work, momentum and impulse, circular motion and rotational dynamics, conservation laws, elasticity and simple harmonic motion. Experiments and hands-on activities complement lecture topics. (F,Sp,Su). Prerequisite: Reading Level 5 and Writing Level 6 and (Math Level 9 or Minimum 2.0 in MATH 141).
PHYS222	Introductory Physics II	4	Second semester continuation of algebra-based physics with laboratory, designed to present the fundamental principles of physics, with applications. Topics include electricity and magnetism, simple harmonic motion, waves, sound, light, geometric and physical optics. Experiments and hands-on activities complement the lecture topics. (F,Sp). Prerequisite: Math Level 9 and Minimum 2.0 in PHYS 221 or (PHYS 201 and PHYS 225).
PHYS251	Physics I: Mechanics	5	First in a two-semester sequence of calculus-based physics with laboratory for science and engineering students. Topics include forces and motion, momentum, work and energy, conservation laws of energy and momentum, rotational motion, static equilibrium, gravitation, oscillations. May include relativity, nuclear physics, thermodynamics. Experiments and hands-on activities complement lecture topics. (F,Sp,Su). Prerequisite: (Minimum 2.0 in MATH 152 or MATH 162 or concurrently) and Reading Level 5 and Writing Level 6.

COURSE	TITLE	CREDIT HOURS	TEXT
PHYS252	Physics II:Electrom/Wave/Optic	5	Second in a two-semester sequence of calculus-based physics with laboratory for science and engineering students. Topics include electric and magnetic forces and fields, electromagnetic energy, currents and circuits, electromagnetic oscillations and waves, mechanical waves and sound, light waves, physical and geometrical optics. Experiments and hands-on activities complement lecture topics. (F,Sp). Prerequisite: Minimum 2.0 in PHYS 251 or (PHYS 215 and PHYS 225) and (Minimum 2.0 in MATH 152 or MATH 162).
POLS120	American Political System	4	An analysis of the American political system, emphasizing the federal system and government at the national level. This course studies national governmental institutions' activities, functions and methods of organizing resources and making policy. Emphasis is on political participation by an informed public. (F,Sp,Su). Prerequisite: Reading Level 5.
POLS121	State and Local Government	4	An overview of state and local government in the United States with an emphasis on the Michigan government. Study is focused on state and local governmental institutions' activities, functions, resource management and policymaking. Consideration is given to relationships between federal, state and local governments, the issues they confront, and public participation. (F,Sp,Su). Prerequisite: Reading Level 5.
POLS201	Intro to Political Science	3	This course is an introduction to the study of politics and the academic fields of Political Science. It examines the fundamental nature of politics, the exercise of power and their implications. Students will explore the need for governance, role of power, place of individuals in society and political institutions. (F,Sp). Prerequisite: Reading Level 5.
POLS205	Government Internship	3	This course offers the student a chance to observe the actual workings of the political process by participating in it. Participation will provide students an exposure to public policy making and an opportunity to reflect on that process through course assignments. The program covers all levels of government, from city and township through the federal level. (F,Sp). Prerequisite: Reading Level 5. Course Note: After you have registered, complete the online application at https://www.lcc.edu/academics/social-sciences/political-science/ and bring a copy to the first day of class.
POLS206	Advanced Government Internship	3	This course offers the student a chance to observe the actual workings of the political process by participating in it. Participation will provide students an exposure to public policy making and an opportunity to reflect on that process through course assignments. The program covers all levels of government, from city and township through the federal level. (F,Sp). Prerequisite: Reading Level 5. Course Note: After you have registered, complete the online application at https://www.lcc.edu/academics/social-sciences/political-science/ and bring a copy to the first day of class.
POLS240	Introduction to Public Policy	3	This course will provide an analysis of political and organizational processes which influence the formulation and implementation of public policy. Special attention will be given to the formulation, implementation, and evaluation of various selected public policies. Further, the course is intended to develop some skills for the evaluation and design of policies. (F,Sp). Prerequisite: Reading Level 5.
POLS250	Campaigns & Elections	3	Emphasizes origins, structure, and functions of US and Michigan political parties. Examines the election process and factors influencing election results. Emphasis is placed on the importance of organizing effective political action and citizen participation, and the role of interest groups in American and Michigan politics. (F). Prerequisite: Reading Level 5 and Writing Level 6.
POLS260	Comparative Political Systems	3	An introduction to the institutions, processes, and policies of political systems throughout the world. The course will compare political cultures and behavior in the United States, the industrial nations of Europe and Asia, and the developing nations, with special emphasis on the themes of democracy, participation, and political change. (F,Sp). Prerequisite: Reading Level 5 and Writing Level 6.
POLS270	International Relations	3	A course in contemporary international relations, with emphasis on the effect political cultures in different countries have on the international system. Concepts, theories, and rudimentary methods of comparison and analysis are surveyed. The relationship between international politics and U.S. foreign and domestic policy is explored. (F,Sp). Prerequisite: Reading Level 5 and Writing Level 6.
POLS271	Contemporary US Foreign Policy	3	The course explores the causes and effects of U.S. foreign policy, how and why the U.S. rose to its hegemonic position, and which directions are most likely for the future. Students will examine domestic and global actions that influence U.S. foreign policy. (F). Prerequisite: Reading Level 5 and Writing Level 6.

COURSE	TITLE	CREDIT HOURS	TEXT
POLS295	Ind Study in Political Science	1 to 4	An opportunity for self-directed learners to explore topics related to, but not taught in the curriculum. Students spend at least two hours per week for each credit. A detailed proposal must be submitted by the student for approval by the Department and supervising instructor prior to registration. (F,Sp,Su). Prerequisite: Department Approval.
PSYC175	Psyc of Death: Prep for Living	3	Examines psychological theories, concepts, and research that pertain to the study of death and personal death awareness. Topics include cross-cultural and historical perspectives, health care systems, medical ethics, grief/loss issues, funerals and body disposition, legal and social issues, death in modern society, suicide and beliefs about life after death. (Sp). Prerequisite: Reading Level 5.
PSYC180	Intro to Positive Psychology	3	Examines psychological theories, concepts and research that pertain to the study of positive psychology. Topics include the empirical study of well-being, happiness, love, optimism, hope, the concept of "flow," courage, interpersonal skills, perseverance and morality. Research methods, studies, and findings will be critically analyzed. (F). Prerequisite: Reading Level 5 and Writing Level 6.
PSYC200	Introduction to Psychology	4	The basic orientation to the field of psychology, designed as a general survey and as preparation for advanced courses in the field. Topics include methods, nervous systems, intelligence, development, learning, memory, personality, abnormality, therapy, and social behavior. (F,Sp,Su). Prerequisite: Reading Level 5.
PSYC202	Psychology of Personality	3	A survey of the leading theories of personality and personality development. Topics include Freudian/psychodynamic, trait, behavioral, humanistic, and Yoga/Buddhist theories, assessment of personality, and major personality theorists. (F,Sp,Su). Prerequisite: Minimum 2.0 in PSYC 200 and Reading Level 5 and Writing Level 6. Course Note: An online course may require students to travel to an exam site for proctored exams. If you live at least 60 miles from LCC's Main Campus you may request to test at an approved proctored location (additional fees may apply). For additional information please visit https://www.lcc.edu/services/testing/
PSYC203	Social Psychology	3	A theoretical and empirical approach to understanding individual social and group behavior. Examines the person and the social environment with a focus on attitudes, attributions, interpersonal and intrapersonal behavior, and group processes. (F,Sp,Su). Prerequisite: Minimum 2.0 in (PSYC 200 or SOCL 120) and Reading Level 5 and Writing Level 6.
PSYC205	Human Growth and Development	3	A study of the human life cycle from conception to death. Designed to investigate, describe, and explain changes in the physical, social, emotional, and cognitive areas that are a result of the continuous interaction of maturation and experience. (F,Sp,Su). Prerequisite: Minimum 2.0 in PSYC 200 and Reading Level 5 and Writing Level 6.
PSYC209	Cognitive Psychology	3	Cognitive psychology is the study of the human mind; its domain includes questions concerning how people perceive the world, remember information, use knowledge, understand language, learn, reason, and solve problems. (F). Prerequisite: Minimum 2.0 in PSYC 200 and Reading Level 5 and Writing Level 6.
PSYC210	Brain and Behavior	3	Brain and Behavior integrates psychology and biology, emphasizing how the nervous system controls behavior. The course provides an examination of the structure and function of the nervous system and the neurobiological bases of mental illness, drug abuse, movement, sleep, memory, feeding and drinking, sensory processing, and neurological disorders. (Sp). Prerequisite: Minimum 2.0 in (PSYC 200 or BIOL 121 or BIOL 127) and Reading Level 5 and Writing Level 6.
PSYC221	Child Psychology	3	Explores theories and principles of child cognitive and physical development from conception to puberty. The course covers psychological, sociological, and biological aspects of maturation and development. Topics include issues such as moral development, social development, language development, and cultural and cross cultural influences on the developing child. (F,Sp,Su). Prerequisite: Minimum 2.0 in PSYC 200 and Reading Level 5 and Writing Level 6.
PSYC222	Adolescent Psychology	3	Examines theoretical and empirical literature related to adolescence, emphasizing biological, psychological, and sociological aspects of maturation and development from puberty to young adulthood. Topics include the adolescent's search for identity; influences of culture, family, school and peer group; and problems and pathologies in adolescence. (Sp). Prerequisite: Minimum 2.0 in PSYC 200 and Reading Level 5 and Writing Level 6.
PSYC240	Psychology of Human Sexuality	3	An exploration of psychological aspects of human sexuality, including research methods, response, identity, development, attraction and intimacy, communication, orientation, attitudes, diseases, and disorders. (F,Sp). Prerequisite: Reading Level 5.

COURSE	TITLE	CREDIT HOURS	TEXT
PSYC250	Abnormal Psychology	3	A survey of the nature, development, diagnosis, and treatment of psychopathology viewed from a general-systems perspective (psychological, sociological, and biological). Major theories of causes, scientific research, and diagnostic and therapeutic techniques are studied with respect to various psychological disorders. (F,Sp,Su). Prerequisite: Minimum 2.0 in PSYC 200 and Reading Level 5 and Writing Level 6.
PSYC295	Ind Study in Psychology	1 to 4	An opportunity for self-directed learners to explore topics related to, but not taught in the curriculum. Students spend at least two hours per week for each credit. A detailed proposal must be submitted by the student for approval by the Department and supervising instructor prior to registration. (F,Sp,Su). Prerequisite: Department Approval.
QSEM100	Quality Assurance Seminar	.25 to 5	Seminar content is dependent upon course requirement. (F,Sp,Su). Prerequisite: None.
RDGR101	Personal Reading I	1	One-credit laboratory course may be taken concurrently with other reading courses to provide extra instruction and practice. One-to-one instruction. (F,Sp,Su). Prerequisite: Reading Level 1 and Writing Level 1 and Department Approval.
RDGR102	Personal Reading II	2	Two-credit laboratory course may be taken concurrently with other reading courses to provide extra instruction and practice. One-to-one instruction. (F,Sp,Su). Prerequisite: Reading Level 1 and Writing Level 1 and Department Approval.
RDGR103	Personal Reading III	3	Three-credit laboratory course may be taken concurrently with other reading courses to provide extra instruction and practice. One-to-one instruction. (F,Sp,Su). Prerequisite: Reading Level 1 and Writing Level 1 and Department Approval.
READ007	Introduction to Phonics	4	Explores relationship of English language sounds to their corresponding printed alphabetical letters and letter combinations. Examines rules governing variations in these sounds, the process of syllabication, accent, the dictionary pronunciation system, structural analysis of words, and the relationship of phonics to reading and spelling. (F,Sp). Prerequisite: Reading Level 1 and Writing Level 1.
READ100	Reading Laboratory	4	Designed to teach fundamental reading skills through small group/individualized instruction. Intended for students whose reading skills lie within the READ Level 1 literacy range as indicated by the College Placement Test. (F,Sp,Su). Prerequisite: Reading Level 1 and Writing Level 1. Course Note: Due to the limited class size of READ 100, the Center for Transitional Learning may administratively withdraw any student with a reading level higher than 2. Please contact the Center for Transitional Learning at (517) 483-1061 if you have questions about placement into READ 100.
READ108	Individualized Reading	4	Designed for average readers, especially adults in the working community, who wish to improve their reading proficiency with one-on-one/small group instruction and directed practice. Students concentrate on areas that need strengthening. (F,Sp,Su). Prerequisite: Reading Level 3 and Writing Level 2. Course Note: READ 108 does not raise reading levels.
READ111	Reading: Essential Strategies	4	Designed to provide a transition from mastery of basic reading skills and individualized tutorial literacy instruction to a mainstream, classroom learning experience. Includes emphasis in reading for main ideas, vocabulary development, improving comprehension, drawing conclusions from implied meaning, and application of techniques to insure academic survival. (F,Sp,Su). Prerequisite: Reading Level 2 and Writing Level 2.
READ114	Reading Skills	4	Designed to increase basic comprehension skills, build vocabulary, and prepare students for college-level reading through the exploration of effective study techniques. (F,Sp,Su). Prerequisite: Reading Level 3 and Writing Level 2.
READ116	Reading Comprehension	4	Designed to extend beyond reading comprehension at the literal level, develop inferential ability and recognition of structure and expository patterns in reading and increase reading rate for greater reading efficiency. Additionally, attention is given to vocabulary improvement, multiple purposes of reading, importance of flexibility in reading, and increased concentration. (F,Sp,Su). Prerequisite: Reading Level 4 and Writing Level 4.
READ165	Critical Reading	2	This course is designed to go beyond reading comprehension at the literal level and to develop in the individual the ability to grasp implied meanings and draw conclusions. The reader must also be able to perceive the structural and developmental pattern in written material and to judge rationally what he or she reads. (F,Sp,Su). Prerequisite: Reading Level 5 and Writing Level 4.

COURSE	TITLE	CREDIT HOURS	TEXT
READ175	Speed Reading - Adv Vocabulary	2	Designed for the student of an average or better-than-average reading ability. Increases reading rate and comprehension for greater efficiency in studying and in general reading. Special attention is given to vocabulary improvement, the multiple purposes of reading, the importance of flexibility in reading, and increased concentration. (F,Sp,Su). Prerequisite: Reading Level 5 and Writing Level 4.
REAL271	Introduction to Real Estate	2	Overview of the real estate business. Emphasis on points of law and real estate principles useful to the beginning salesperson and/or potential buyer, seller, or investor. (F,Sp). Prerequisite: Reading Level 5.
REAL273	Real Estate Investment	3	The emphasis of this course is on investment analysis, financing, depreciation, capital gains, exchanging, and federal tax implications of real estate acquisitions, ownership, and disposal. (F). Prerequisite: Reading Level 5 and Writing Level 4. Recommended: REAL 271 or REAL 274.
REAL274	Real Estate License Exam	3	Intense study in the fundamentals of real estate. Preparation for the State of Michigan License Examination, administered by the Applied Measurement Professionals (AMP). This class meets statutory requirements including four hours in fair housing. (F,Sp,Su). Prerequisite: Reading Level 5 and Writing Level 4.
REAL275	Real Estate Financing	3	This course covers the significance and nature of mortgage lending, mortgage money markets, sources, types of mortgages, instruments, qualifying, the land contract and its use, administration of a mortgage loan, and a loan portfolio and methods of foreclosure. (F,Sp). Prerequisite: Reading Level 5 and Writing Level 4.
REAL277	Property Management	3	Covers management and the market, marketing residential and commercial rental space, creating an organized management plan, tenant and landlord laws, rent collection, leases, tenant screening, fair-housing requirements, tenant-owner relations, accounting for investment properties, real estate as an investment, managing apartments, office space, retail stores, and special-purpose buildings. (F,Sp). Prerequisite: None.
REAL279	Residential Appraisal	3	This is a survey course on the appraisal of the single family residence. It is designed to expose the student to the basic economic, political, social, and environmental foundations upon which real estate valuation rests. The student will then encounter the processes by which freestanding, single family dwellings are valued. Students will also be acquainted with professional standards and ethics. (F). Prerequisite: Reading Level 5 and Writing Level 4. Course Note: An online course may require students to travel to an exam site for proctored exams. If you live at least 60 miles from LCC's Main Campus you may request to test at an approved proctored location (additional fees may apply). For additional information please visit https://www.lcc.edu/services/testing/
REAL280	Real Estate Law	3	Topics covered in this course include: land and its elements, land titles, land interests, abstracts and title insurance, deeds, easements, liens, mortgages, land contracts, foreclosures and landlord-tenant relations, private land-use controls including restrictions, condominiums, and tax policies pertaining to real estate. (Sp). Prerequisite: Reading Level 5 and Writing Level 4. Recommended: REAL 271 or REAL 274.
RELG211	Religions of South/SE Asia	4	This course examines and analyzes the beliefs and practices of Hinduism, Jainism, Buddhism, Sikhism and Islam in the cultural contexts of South and Southeast Asia. Influences of Buddhist and Hindu traditions on modern European and North American culture are also explored. (F). Prerequisite: Reading Level 5 and Writing Level 6.
RELG212	Judaism, Christianity & Islam	4	This course examines and analyzes the beliefs and practices of Judaism, Christianity and Islam in cultural contexts from their origins to the present. Global reaches and interactions of these religious traditions are explored in Europe, Africa and the Americas. (Sp,Su). Prerequisite: Reading Level 5 and Writing Level 6.
RELG241	Hebrew Bible	4	This course surveys the content of Judaism's Bible (Christianity's Old Testament) in its original Hebrew cultural/religious context, using insights of modern critical scholarship. Origins and early development of Hebrew religious beliefs and practices are examined. (F). Prerequisite: Reading Level 5 and Writing Level 6. Recommended: WRIT 121 or WRIT 131.
RELG242	New Testament Literature	4	This course surveys the content of Christianity's New Testament in its original Hebraic and Greco-Roman context, using insights of modern critical scholarship. Origins and early development of Christianity and its religious beliefs and practices are examined. (Sp,Su). Prerequisite: Reading Level 5 and Writing Level 6. Recommended: WRIT 121 or WRIT 131.
RELG250	Religions of East Asia	4	This course surveys the origins and development of East Asian religions. The religious beliefs and practices of Confucianism, Taoism, Buddhism (Mahayana and Vajrayana), and Shinto are examined in terms of their vital role in the development of ancient and modern East Asian civilizations. (Sp). Prerequisite: Reading Level 5 and Writing Level 6.

COURSE	TITLE	CREDIT HOURS	TEXT
SCIN287	Science Technology Internship	4	This course provides on-the-job training for an applied degree in science technology. Placement is made at an approved training site to earn credits for satisfactory work performance. This internship may be a paid or unpaid work experience. Students will apply knowledge and skills learned in academic courses to real world situations. (F,Sp,Su). Prerequisite: Department Approval.
SCIS293	Dir Histotech Studies I	4	This course gives students training in laboratory safety, quality processes, microscopic evaluation, tissue preparation, human anatomy and cellular structure as a part of a four semester sequence that trains students in the skills required for successful completion of the Histologic Technologist certification examination of the American Society for Clinical Pathology. (F,Sp). Prerequisite: Reading Level 5 and Writing Level 6 and Math Level 5 and Departmental Approval.
SCIS294	Dir Histotech Studies II	4	This course gives students training in chemical principles, specimen fixation, processing, sectioning and staining, and histologic report preparation as a part of a four semester sequence that trains students in the skills required for successful completion of the Histologic Technologist certification examination of the American Society for Clinical Pathology. (F,Sp). Prerequisite: Reading Level 5 and Writing Level 6 and Math Level 5 and Minimum 3.0 in SCIS 293.
SCIS295	Dir Histotech Studies III	4	This course gives students training in histologic techniques for staining of components of human tissue, bacteria and fungi as a part of a four semester sequence that trains students in the skills required for successful completion of the Histologic Technologist certification examination of the American Society for Clinical Pathology. (F,Sp). Prerequisite: Reading Level 5 and Writing Level 6 and Math Level 5 and Minimum 3.0 in SCIS 294.
SCIS296	Dir Histotech Studies IV	4	This course gives students training in advanced histologic techniques and preparation of a professional portfolio as a part of a four semester sequence that trains students in the skills required for successful completion of the Histologic Technologist certification examination of the American Society for Clinical Pathology. (F,Sp). Prerequisite: Reading Level 5 and Writing Level 6 and Math Level 5 and Minimum 3.0 in SCIS 295.
SCIS297	Independent Study in Science	1 to 4	An opportunity for self-directed learners to explore topics related to, but not taught in the curriculum. Students spend at least two hours per week for each credit. A detailed proposal must be submitted by the student for approval by the Department and supervising instructor prior to registration. (F,Sp,Su). Prerequisite: Department Approval.
SDEV100	Student Development Seminars	.25 to 1	This series of seminars provides students and members of the community with opportunities for personal growth. Topics are relevant to current events and community needs. The discussions and activities will allow students to sample and explore a wide variety of areas related to personal and professional development. (F,Sp). Prerequisite: None.
SDEV101	First Year Experience	2	First Year Experience is designed to act as an academic, cultural, and social transition to Lansing Community College. Students will learn strategies for adjusting to college and improving classroom performance. The class will use a standardized freshman assessment to examine students' perceptions of college and develop appropriate academic skills. (F,Sp,Su). Prerequisite: Reading Level 3 or READ 111 Concurrently.
SDEV103	Preventing Parent Burnout	1	This course is designed to facilitate an understanding of parent burnout and its impact on mental and physical functions. The class will address causes, stages and symptoms, family and relationship dynamics, and problem solving. The course will provide multiple skills and mechanisms to cope with stress and prevent parent burnout. (F,Sp,Su). Prerequisite: None.
SDEV107	Getting Started in College	2	This course is designed to offer supplemental instruction to Language Skills lab courses as determined by students and faculty. Topics may include time management, note taking, goal setting, choices and attitude. The activities will allow students to improve in a wide variety of areas related to student and personal development. (F,Sp). Prerequisite: Department Approval.
SDEV118	Stretching Your Dollars	2	The basic money management provides students information about and practice at record keeping budget development, and financial goal-setting and planning. The curriculum addresses wise shopping practices, debt management, and consumer issues such as comparison shopping, coupon use, and internet resources. (F,Sp,Su). Prerequisite: Reading Level 1.
SDEV121	Exploring Your Potential	2	This course is designed to help each person identify past and present achievements which suggest the presence of strengths and potential. The goal of this class is greater realization of one's potential through self-determination. (F,Sp). Prerequisite: None.

COURSE	TITLE	CREDIT HOURS	TEXT
SDEV124	Techniques of Study	2	Students examine their study habits and work toward practicing skills to enhance classroom performance. Classes include weekly lectures, discussions, and assignments. Skills covered include goal-setting, time management, notetaking, reading and memory strategies, library use, and taking exams. A valuable aid for beginning and advanced students. (F,Sp,Su). Prerequisite: Reading Level 3.
SDEV125	Career Planning	2	Students learn a career planning process by identifying their interests, values, and skills through a variety of self assessment exercises. Students will utilize available resources to research career options and participate in classroom discussions on topics relating to career decision-making. (F,Sp,Su). Prerequisite: Reading Level 1.
SDEV126	Self-Defeating Behavior	2	The goal of this course is to learn how self-defeating behaviors begin, are maintained, and how they can be eliminated. Behavior change is aimed at teaching people how to live life more fully and happily by identifying and cultivating life-giving behaviors. (F,Sp,Su). Prerequisite: Reading Level 1 and . Course Note:
SDEV130	Job Search Skills	1	Skills and techniques in the job search process are taught. Course content covers filling out application, writing resumes and cover letters, interviews, and other techniques used in seeking employment. Group discussions focus upon personal attitude toward job hunting. (F,Sp,Su). Prerequisite: Reading Level 1.
SDEV135	Tools for College Success	2	This course provides an introduction to the college experience and to skills that students need to be successful. Topics covered include academic and self-management issues that affect student performance, such as goal-setting, study skills, time management, communication, relationships, career planning, problem-solving, finances and health. (F,Sp,Su). Prerequisite: Reading Level 2.
SDEV142	Assertiveness I	2	This course teaches assertiveness. Assertiveness is behavior where a person expresses her or his opinions, feelings, beliefs, wants, personal rights, and values in a way that respects the rights of others. Techniques covered teach participants to identify and practice exercising interpersonal rights and assertive skills. (F,Sp,Su). Prerequisite: Reading Level 1.
SDEV169	Women as Winners	1	This course is designed to offer participants new tools for insight, self-awareness, and understanding so that they can learn to set their own goals, emancipate themselves from the boundaries they have set for themselves, and, therefore, learn to become more authentic and self-actualizing. (F,Sp,Su). Prerequisite: None.
SDEV190	Success Group	1	Designed to stress improvement of academic performance, the course provides mutual support and deals directly with the problems of underachievement. Students will learn to set and achieve short-term goals, identify motives and attitudes, and study behaviors that lead to success and those that are related to failure. (F,Sp). Prerequisite: None.
SDEV195	Build Healthy Relationships I	2	For those who wish to take a serious look at "what helps" and "what hurts" in building all types of human relationships. Insights can be applied to any type of relationship and will help participants focus on changes they can/need to make in building a healthier relational lifestyle. (F,Sp,Su). Prerequisite: Reading Level 1.
SDEV204	Self-Defense and Women I	1	This seminar is a combination of consciousness-raising and skill-building experiences intended to increase students' understanding, resources, and skills in sexual assault prevention and self-defense. Self-defense techniques taught in this seminar will focus on responses to unarmed attacks. (F,Sp,Su). Prerequisite: None.
SDEV225	Parenting in the Millennium	2	This course will help parents move from "unconscious" to "conscious" parenting, changing from a parental domination to a relationship-centered model. The influence of childhood on parenting style, impact of communication in child-rearing, and understanding the power of the child/parent relationship are included. (F,Sp). Prerequisite: None.
SDEV237	Black Women's Awareness	1	This class is an exploration of concerns and issues confronting the Black woman in America today. Students will have the opportunity to share their viewpoints and life experiences in response to such questions as: Who is the African-American woman? What are her needs? How can those needs be met? (F,Sp). Prerequisite: None.
SDEV240	Empathy Training	2	The student will learn how to use empathy as a technique to deal with emotions, values, and decision making in the communication process. The skills will be taught in a small group emphasizing a supportive, experiential atmosphere. (F,Sp,Su). Prerequisite: None.

COURSE	TITLE	CREDIT HOURS	TEXT
SDEV245	Stress Prevention	1	This course is designed to promote awareness of how stress affects mental, emotional and physical health, and behavior. The goal is to help participants to achieve lifetime coping skills. Topics include personal stressors, mental and physical coping strategies, dietary influences, communication, job or role stress, coping with loss. (F,Sp,Su). Prerequisite: None.
SIGN160	Intro to the Deaf Community	3	This course is designed to introduce the student to the various aspects of life in the deaf community including cultural identity, education, language, the medical perspective, civil rights, disability law, advocacy, audiology, and oppression. Students will be taught up to 300 American Sign Language vocabulary words and phrases, Fingerspelling and numbers. A grade of 2.0 fulfills the Communication Core requirement. (F,Sp,Su). Prerequisite: Reading Level 5 and Writing Level 4. Course Note: Non-degree students may waive SIGN 160.
SIGN161	American Sign Language I	3	This course introduces the basics of American Sign Language (ASL) and is designed for students who have little or no previous knowledge of ASL. Beginning vocabulary, ASL questions, commands, and simple sentence structures as well as basic personal and descriptive classifiers are introduced to develop rudimentary conversational skills in ASL. Elements of the Deaf Community and Deaf Culture will be introduced. (F,Sp,Su). Prerequisite: (Minimum 2.0 in SIGN 160 or concurrently) and Reading Level 5.
SIGN162	American Sign Language II	3	This course is designed to continue development of American Sign Language (ASL) skills. Vocabulary, semantic, classifiers, pluralization, and temporal aspects, beginning grammatical non-manual signals are introduced to develop conversational skills. Elements of the Deaf Community and Deaf Culture will be included.(F,Sp,Su). Prerequisite: Minimum 2.0 in SIGN 161.
SIGN163	American Sign Language III	3	This course is designed to continue development of American Sign Language (ASL) skills. Vocabulary, body part classifiers, grammatical non-manual signals, spatial referencing, English idioms, conceptual accuracy practice and beginning role shifting are used to develop conversational skills. Elements of Deaf Community and Deaf Culture will be included.(F,Sp,Su). Prerequisite: Minimum 2.0 in SIGN 162.
SIGN164	American Sign Language IV	3	This course is designed to continue development of American Sign Language (ASL) skills. Vocabulary, grammatical non-manual signals, role shifting, conceptual accuracy practice and sign translation are used to develop conversational and sight translation skills. Designed for students intending to become sign language interpreters.(F). Prerequisite: Minimum 2.0 in SIGN 163.
SIGN166	Fingerspelling	3	This course provides the student with concentrated instruction and practice in both expressive and receptive fingerspelling and numbering skills. Designed for students intending to become sign language interpreters. (F,Sp,Su). Prerequisite: Minimum 2.0 in SIGN 161. Recommended: SIGN 162 or concurrently.
SIGN167	Beginning Sign to Voice	3	Designed to increase the student's receptive skills in conversational sign language focusing on comprehension of the various manual communication systems utilized by deaf persons. Sign-to-voice techniques and practice will be introduced through use of prepared videotapes. Intended for students who plan to become sign language interpreters. (F,Sp,Su). Prerequisite: Minimum 2.0 in SIGN 162.
SIGN168	Conversational ASL	2	This course focuses on synthesizing grammatical elements of American Sign Language and using them in an expressive mode. It creates awareness of conversational behaviors used by the deaf community and provides practice of those behaviors in classroom and other settings. Designed for students intending to become sign language interpreters. (Su). Prerequisite: Minimum 2.0 in SIGN 162.
SIGN169	Expressive/Receptive Comm	2	This course enhances the student's receptive and voicing skills, specifically skills needed to pass the Interpreter Training Program Screening Assessment (ITP Test), such as ASL vocabulary recognition, English sentence structure, and vocal tone and volume. Topics will be covered using videos, lectures, guest signers, and in-class activities. (Su). Prerequisite: (Minimum 2.0 in SIGN 163 or concurrently) and (minimum 2.0 in SIGN 167 or concurrently).
SIGN170	Expressive/Receptive ASL	3	This course focuses on grammatical elements of American Sign Language (ASL) using expressive skills. Conversational behaviors will be discussed. Student's receptive and voicing skills will focus on ASL vocabulary recognition, English sentence structure, and vocal tone and volume. (Su). Prerequisite: Minimum 2.0 in SIGN 163 or concurrently.

COURSE	TITLE	CREDIT HOURS	TEXT
SIGN176	Advanced Fingerspelling	2	This course provides the student with advanced concentrated instruction and practice in both expressive and receptive fingerspelling skills. Designed for students intending to become sign language interpreters. (F,Sp,Su). Prerequisite: Minimum 2.0 in SIGN 166.
SIGN240	Interpreting/Transliterating	3	American Sign Language vocabulary will continue to be developed while learning about the interpreting and transliterating process. Students will analyze text and demonstrate the ability to facilitate communication in both ASL sentence structure or English word order. The class involves expressive and receptive skill development. Course is designed for students intending to be sign language interpreters. (F). Prerequisite: Successful ITP Screening.
SIGN250	Deaf Culture and History	3	This course looks closely at the unique experiences of those in the Deaf Community by examining the history of the Deaf Community in America and the sociology of Deaf, Deaf-Blind, and Hard of Hearing people. Designed for students intending to become sign language interpreters. (Sp). Prerequisite: Minimum 2.0 in SIGN 163.
SIGN260	Linguistic Principles of ASL	3	An overview of the linguistic principles of American Sign Language (ASL) including its basic phonology, morphology, syntax, variation, results of language contact with English and other signed languages, pragmatics, bilingualism and language as art. Topics relating to interpreting, the Deaf Community, and Deaf Culture will be emphasized. Designed for students intending to become sign language interpreters. (F). Prerequisite: Minimum 2.0 in SIGN 163.
SIGN261	Principles of Interpreting	3	Surveys professional interpreting through lecture, role-playing, and classroom discussion. Introduces the ethics of interpreting and, roles and responsibilities of the professional interpreter. Examines necessary skills of the interpreter in various settings: educational, mental health, vocational rehabilitation, legal, religious, phone, television, medical, deaf, blind, and minimal language skills. (F). Prerequisite: Successful ITP Screening.
SIGN263	Intermediate Sign to Voice	3	This course develops and refines necessary basic skills and fluency in receptive sign language and for voicing all levels of communication of deaf individuals. Techniques taught include interpreter task analysis, listening, attending, internal message formulation, vocabulary search, and monitoring output. Designed for students intending to become sign language interpreters. (Sp). Prerequisite: Minimum 2.5 in (SIGN 240 and SIGN 261).
SIGN264	Advanced Sign to Voice	3	This course provides advanced skill development and fluency in voicing for all communication levels of deaf persons. Techniques taught are voice projection, breathing and relaxation, analysis of sign information, anticipation and prediction, closure, modality switching, correction, image search, decalage, and pacing. Designed for students intending to become sign language interpreters. (Sp). Prerequisite: Minimum 2.5 in SIGN 263.
SIGN265	Adv Interpretg/Transliterating	3	This course continues the development of skills necessary for interpreter evaluation/qualification. Students will be provided with simulated testing situations using interactive videotapes of hearing/deaf individuals requiring students to interpret/transliterate. Designed for students intending to become sign language interpreters. (F). Prerequisite: Minimum 2.5 in SIGN 263.
SIGN266	Interactive Interpreting	2	This course provides students with simulated testing interpreter/transliterating settings using interactive videotapes of hearing and deaf individuals with the purpose of developing skills necessary for interpreter evaluation. Designed for students intending to become sign language interpreters. (Su). Prerequisite: Minimum 2.5 in SIGN 263.
SIGN267	Sign Internship I	3	Combines student transliterated lectures and supervised placement in various interpreting settings to allow directed observation and application of practical interpreting skills. Students will spend an additional 8 hours a week in their placement setting. Designed for students intending to become sign language interpreters. (Sp). Prerequisite: Minimum 2.5 in (SIGN 240 and SIGN 261).
SIGN268	Sign Internship II	3	Combines student interpreted lectures and supervised placement in various interpreting settings to allow directed observation and application of practical interpreting skills. Students will spend an additional 8 hours a week in their placement setting. Designed for students intending to become sign language interpreters. (Su). Prerequisite: Minimum 2.5 in SIGN 267.
SIGN294	Sign Lang Interpreting Seminar	3	Special topics for intermediate and advanced interpreters. Topics cover a broad range of subjects related to the interpreting field and include preparation for state and national exams. (F,Sp,Su). Prerequisite: Minimum 2.5 in SIGN 266.

COURSE	TITLE	CREDIT HOURS	TEXT
SIGN295	Ind Study in Sign Language	1 to 4	An opportunity for self-directed learners to explore topics related to, but not taught in the curriculum. Students spend at least two hours per week for each credit. A detailed proposal must be submitted by the student for approval by the Department and supervising instructor prior to registration. Restricted to students intending to become sign language interpreters. (F,Sp,Su). Prerequisite: Department Approval. Recommended: Minimum 2.0 in SIGN 261.
SOCL120	Introduction to Sociology	4	A survey of major theoretical perspectives, concepts, and methods of sociology. Emphasis is placed on societal transformation, social organization, culture, cultural diversity, socialization, social stratification, social institutions, and social change within a global context. (F,Sp,Su). Prerequisite: Reading Level 5.
SOCL185	Intro African-American Studies	3	A survey of culture and social structure of people of African descent and their role in the making of the US society. Theories and concepts pertinent to understanding the development and dynamics of contemporary African-American experience will be explored. Topics include slavery, multiculturalism, civil rights movement and affirmative action. (Sp). Prerequisite: Reading Level 5. Recommended: (Minimum 2.0 in WRIT 121 or WRIT 131) or Writing Level 6.
SOCL254	Marriage and Family	3	A survey of theoretical perspectives on the institutions of marriage and family. Topics include the historical context of family, gender roles, sexual behavior, values, psychological needs, divorce, parenting, family problems, and social policy. Variations in family types and lifestyles among diverse groups within the U. S. and elsewhere are examined. (F,Sp). Prerequisite: (Minimum 2.0 in SOCL 120 or PSYC 200) and Reading Level 5. Recommended: Minimum 2.0 in (WRIT 121 or WRIT 131) or Writing Level 6.
SOCL255	Contemporary Social Problems	3	This course is a theoretical and empirical survey of the nature and causes of social problems such as poverty, crime, racial and gender inequality, demographic and environmental changes, health care, education and family stability. Examples from other societies will be used for comparative analysis and establishing global links. (F,Sp,Su). Prerequisite: Minimum 2.0 in SOCL 120 and Reading Level 5. Recommended: (Minimum 2.0 in WRIT 121 or WRIT 131) or Writing Level 6.
SOCL260	Race and Ethnicity	3	Sociological study of race and ethnicity in the U.S. and globally. Emphasis is placed on theories of race, racial and ethnic group formation, ethnic stratification, identity formation, immigration and struggles for equality. Racial and ethnic group experiences in western and non-western societies are traced historically and viewed comparatively. (F,Sp). Prerequisite: Minimum 2.0 in SOCL 120 and Reading Level 5. Recommended: (Minimum 2.0 in WRIT 121 or WRIT 131) or Writing Level 6.
SOCL295	Independent Study in Sociology	1 to 4	An opportunity for self-directed learners to explore topics related to, but not taught in the curriculum. Students spend at least two hours per week for each credit. A detailed proposal must be submitted by the student for approval by the Department and supervising instructor prior to registration. (F,Sp,Su). Prerequisite: Department Approval.
SOWK101	Introduction to Social Work	3	This course introduces the principles of social work practice. Emphasis is on the history of social work, description of methods, skills and standards of ethical practice. There is an overview of social work roles and careers in agencies and institutions with relevance to the diverse social and client needs. (F,Sp,Su). Prerequisite: Reading Level 5 and Writing Level 6.
SOWK205	Social Welfare	3	This course introduces the definition and concept of social welfare, its history, programs, attitudes, values, and philosophy. It emphasizes the development of private and public services, changing patterns of services, the evolving changes in the Social Security Act and community action, with attention to current issues in social welfare policy. Offered odd years Spring Semester only. (Sp). Prerequisite: Minimum 2.5 in SOWK 101 or minimum 2.5 in HUSE 100.
SPAN104	Spanish for Business	3	This course is designed to develop spoken and written communication skills in business Spanish. Emphasizes question-answer patterns, high-frequency expressions and key vocabulary in business. Students will perform reading and writing exercises, practice vocabulary and dialogues essential to specific business-related situations, and study cultural topics relevant to Spanish in business settings. (F). Prerequisite: Reading Level 5. Recommended: Previous experience with the Spanish language is strongly advised.
SPAN106	Spanish for Health Care	3	This course is designed to develop spoken and written communication skills in health care Spanish. Emphasizes question-answer patterns, high-frequency expressions and key vocabulary in health care. Students will perform reading and writing exercises, practice vocabulary and dialogues essential to specific health care-related situations, and study cultural topics relevant to Spanish in health care settings. (Sp). Prerequisite: Reading Level 5. Recommended: Previous experience with the Spanish language is strongly advised.
SPAN115	Conversational Spanish I	3	First course of a two-semester sequence in conversational Spanish. Designed for persons who have no knowledge of Spanish and who wish to develop basic conversational skills in the language. Course emphasizes pronunciation of Spanish sounds, practical vocabulary, culture, and essential grammar for communication. Class taught largely in Spanish. (F,Sp,Su). Prerequisite: None.

COURSE	TITLE	CREDIT HOURS	TEXT
SPAN116	Conversational Spanish II	3	Second course of a two-semester sequence in conversational Spanish. Designed for persons who have some knowledge of the language and wish to continue developing basic conversational skills. Course emphasizes practical vocabulary, some aspects of Hispanic culture, and essential grammar for communication. Class taught largely in Spanish. (F,Sp,Su). Prerequisite: None. Recommended: SPAN 115 or equivalent.
SPAN121	Elementary Spanish I	4	First course of a two-semester sequence in elementary Spanish. Designed for persons with no knowledge of Spanish who wish to develop basic language skills. Elementary practice in listening comprehension, speaking, reading, and writing. Provides useful information about the Spanish-speaking world. Class taught largely in Spanish. (F,Sp,Su). Prerequisite: Reading Level 5.
SPAN122	Elementary Spanish II	4	Second course of a two-semester sequence in elementary Spanish. Introduces more complex structures while developing a foundation in the essentials of the language. Emphasizes practice in listening comprehension, speaking, reading, and writing. Provides useful information about the Spanish-speaking world. Class taught largely in Spanish. (F,Sp, Su). Prerequisite: Minimum 1.5 in SPAN 121 or equivalent.
SPAN201	Intermediate Spanish I	4	First course of a two-semester sequence in intermediate Spanish. Begins with review of grammar, and continues with intensive vocabulary building, listening comprehension, and writing compositions. Encourages conversation by introducing discussions about the cultures of the Spanish-speaking world. Class taught entirely in Spanish. (F). Prerequisite: Minimum 1.5 in SPAN 122 or equivalent.
SPAN202	Intermediate Spanish II	4	Second course of a two-semester sequence in intermediate Spanish. Continues a review of grammar, intensifies vocabulary building, strengthens listening comprehension and composition writing, and improves oral fluency through intense discussions on the cultures of the Spanish-speaking world. Class taught entirely in Spanish. (Sp). Prerequisite: Minimum 1.5 in SPAN 201 or equivalent.
SPCH110	Oral Comm in the Workplace	3	Introduction to oral communication skills in business and technology. Students will learn to interact effectively in diverse workplace situations. Activities include participating in interviews, managing group dynamics, giving planned presentations, and using current technology to enhance business communication. A grade of 2.0 or higher fulfills the Communication Core Requirement. (F,Sp,Su). Prerequisite: Reading Level 5 and Writing Level 6.
SPCH120	Dynamics of Communication	3	Introduction to the theory and practice of speaking and listening effectively in interpersonal, group, and public communication situations. The course utilizes readings, lectures, discussions, learning activities, and oral and written assignments to help students both understand the communication process and become more skillful interpersonal, group (team), and public communicators. A grade of 2.0 or higher fulfills the Communication Core Requirement. (F,Sp,Su). Prerequisite: Reading Level 5 and Writing Level 6. For more information on taking SPCH 120 online (30215, 30216, 30217, 30218, 30219 and 30221) please see: https://www.lcc.edu/academics/communication-journalism-and-language/communication/
SPCH130	Fund of Public Speaking	3	Helps beginning speakers develop skills and confidence needed to speak effectively to audiences in public situations. Students learn proper techniques for researching, developing, organizing, outlining, and delivering effective informative, panel and persuasive presentations. At the same time they learn interpersonal concepts that affect their work in group presentations. A grade of 2.0 or higher fulfills the Communication Core Requirement for curricula effective Fall 2003 or later. (F,Sp,Su). Prerequisite: Reading Level 5 and Writing Level 6.
SPCH140	Interpersonal Communication	3	Introduction to fundamental principles and skills of interpersonal communication. Students investigate techniques for interacting effectively in family, intercultural, and male/female relationships. Class discussions, learning activities, and assignments assist students in examining the impact of their communication on others and in developing effective interpersonal skills. (F,Sp,Su). Prerequisite: Reading Level 5.
SPCH260	Nonverbal Communication	3	Introduction to the ways people communicate without words. Students investigate nonverbal communication theory and research and learn the messages that gestures, facial expressions, vocal cues, physical appearance, clothing, touch, distance, and time convey in American and foreign cultures. Students' nonverbal communication skills are enhanced through assignments and in-class learning activities. (F). Prerequisite: Reading Level 5 and Writing Level 6.

COURSE	TITLE	CREDIT HOURS	TEXT
SPCH270	Mass Communication	3	Introduction to broadcast, film, and print media and their impact on the individual and society. Students investigate theory and research on topics including values the media convey, media stereotypes, violence, news, advertising, and the role of media in political campaigns. Assignments and observational projects help students become enlightened media consumers. (Sp). Prerequisite: Reading Level 5.
SPCH280	Intercultural Communication	3	Introduction to the theory and practice of successful intercultural communication. Students investigate how communication is affected by dimensions of cultures, cultural values, world views, relationships, and social institutions. Students will become ethical and skillful intercultural communicators. A grade of 2.0 or higher fulfills the Global Perspectives and Diversity Core requirement for curricula effective Fall 2005 or later. (F,Sp). Prerequisite: Reading Level 5.
SPCH295	Independent Study in Speech	1 to 4	An opportunity for self-directed learners to explore topics related to, but not taught in the curriculum. Students spend at least two hours per week for each credit. A detailed proposal must be submitted by the student for approval by the Department and supervising instructor prior to registration. (F,Sp,Su). Prerequisite: Department Approval.
STAT170	Introduction to Statistics	3	This is a survey course in statistics for students in social science, psychology, education, and other nonbusiness disciplines. Topics studied include descriptive statistics, probability, random variables, normal distribution, t distribution, confidence intervals, hypotheses testing, correlation, and linear regression. In addition, students will solve applied problems by completing required computer assignments using a standard statistical software package, such as Excel. (F,Sp,Su). Prerequisite: (Minimum 2.0 in MATH 120 or MATH 121 or MATH 126 or MATH 130 or Math Level 7) and Reading Level 5 and Writing Level 4. Recommended: Knowledge of Windows software.
STAT215	Intro to Probability and Stats	4	This is an introductory course in probability and statistics. Topics studied include descriptive statistics, probability, random variables, normal distribution, t distribution, chi-square distribution, F distribution, confidence intervals, hypothesis testing, correlation, and linear regression. In addition, students will solve applied problems by completing required computer assignments. (F,Sp). Prerequisite: (Minimum 2.0 in MATH 120 or MATH 121 or MATH 122 or MATH 130 or MATH 126 or MATH 141 or Math Level 7) and Reading Level 5 and Writing Level 4. Recommended: Knowledge of Windows software and MATH 141.
STEC100	Intro to Stage Tech Industry	2	This course is an introduction to the stage technology industry for apprentices in the Michigan Stage Technician Apprenticeship Program. It presents the history and current status of the various segments of the industry and introduces basic skills, terminology, safety-concerns, and legal issues designed to prepare the apprentice for on-the-job training. (Su, F). Prerequisite: None.
STEC110	Stage Tech Field Experience	1	This course provides Stage Technology majors and MSTAP apprentices with off-campus, on-the-job training opportunities. Students will answer a variety of temporary job calls to support theatrical, arena, conference, sporting, and other events requiring the expertise of stage technicians. The student must be able to travel throughout mid-Michigan and to work odd hours. (F,Sp,Su). Prerequisite: Department Approval.
STEC122	Advanced Stagecraft	3	Advanced techniques of stagecraft and elements design for the performing arts. Preparation of working drawings and cut lists; fabrication of the design; lighting design techniques and implementation. Application of color theory and textures to scene painting, lighting design, and costuming. Students will assist with set design, lighting, and construction for a theatre production. (Sp). Prerequisite: Minimum 2.0 in THEA 114.
STEC130	Audio/Visual Technology	3	An introduction to audio/visual equipment, principles and practices used in the stage technology industry with an emphasis on convention and trade show settings. Sound amplification, lighting control systems, simple video camera operation, and various projection devices will be included. (Sp). Prerequisite: None.
STEC223	Sound Reinforcement Practicum	2	A hands-on course that permits students to apply the theory and practice acquired in STEC 123 to a large-scale practical project. The course provides concert sound reinforcement for bands playing at Riverfront Park during July 4th festivities. (Su). Prerequisite: Reading Level 3 and Writing Level 4 and minimum 2.0 in STEC 123 (previously MTEC 122) and Department Approval.
STEC290	Guided Independent Study	1 to 4	An opportunity for self-directed learners to explore topics of particular interest more thoroughly. Students will meet intermittently throughout the semester with an assigned faculty member for guidance and evaluation of progress. A proposal detailing the area of independent investigation must be submitted by the student prior to registration. (F,Sp). Prerequisite: Department Approval. Recommended: 75% completion of the Stage Technology Program.

COURSE	TITLE	CREDIT HOURS	TEXT
STEC296	STEC Internship	2	An off-campus worksite experience that serves as part of a capstone experience for stage technicians. Students will work at venues having a multi-event season and be involved in building, installing, and as members of running crew. Regularly scheduled progress reports will be given and discussed with the supervising faculty member. (F,Sp,Su). Prerequisite: Department Approval . Recommended: 80% completion of the Stage Technology Program.
STEC298	Special Projects	1 to 4	An opportunity for a group of learners to become involved in a common project that will allow each to develop additional skills or to hone present skills. Availability of academically appropriate projects and student interest determines the nature of the experience. (F,Sp). Prerequisite: Department Approval . Recommended: 75% completion of the Stage Technology Program.
SURG100	Fundamentals of Surgical Tech	3	Introduction to role and function of the surgical technologist as a member of the surgical team. Lectures present all skills, procedures, and protocol necessary to participate in the operating room. (F). Prerequisite: Admission to Surgical Technology Program. Co-Requisite Course(s): SURG 101 and SURG 108 and SURG 109 and SURG 121 and SURG 122.
SURG101	The Surgical Patient	2	Lectures will present the protocol and procedures directly affecting the care and safety of the patient. This includes the ethical, legal, and moral responsibilities of the technologist, the concepts of patient care, and preoperative routines. (F). Prerequisite: Admission to Surgical Technology Program. Co-Requisite Course(s): SURG 100 and SURG 108 and SURG 109 and SURG 121 and SURG 122.
SURG103	Surgical Asepsis	2	This course defines and describes pathogenic microorganisms and the causes and prevention of infection in the hospital. The student will be introduced to sterilization, disinfection, and other methods of controlling microbial growth. (F,Sp). Prerequisite: None.
SURG106	Surgical Tech Directed Study	1 to 3	This course is designed to update or enhance knowledge, skills, and competencies for the returning Surgical Technology student or for remediation in the program through evaluation of previous learning, self-study, and scheduling into preceptor-directed clinical mentorship. It requires at least 16 hours of independent work for each credit or 48 hours of clinical per credit. A learning contract specifying objectives, activities and outcomes is required. (F,Sp,Su). Prerequisite: Department Approval.
SURG107	Surgical Technology Review	2	This on-line review course will prepare students for the Surgical Technology National Certification Exam. Topics include surgical patient care; surgical asepsis; instruments; fundamentals of surgery; operative procedures; patient safety; positioning; confidentiality; and O.R. policies, standards and procedures. Newly developing, state-of-the-art technologies are examined and test taking skills are reviewed. (F,Sp). Prerequisite: Must be an accredited program graduate or otherwise qualified to take the Surgical Technology National Certification Exam and Department Approval.
SURG108	Surgical Pharmacology	2	This course introduces the student to basic types of anesthesia, anesthesia agents, indications and contraindications of medications, and the calculations of maximum dosages of various drugs. The student will become familiar with a wide array of pharmacological agents specifically related to the peri-operative care being provided for the surgical patient. (F). Prerequisite: Admission to Surgical Technology Program. Co-Requisite Course(s): SURG 100 and SURG 101 and SURG 109 and SURG 121 and SURG 122.
SURG109	Basic Operative Procedures	2	This course introduces the student to basic types of surgical procedures with a primary focus on the sequential steps involved in these procedures. Surgical anatomy, physiology and pathophysiology will be addressed relative to basic surgical intervention. Students will become familiar with instrumentation, anticipatory skills, and surgical asepsis and surgical conscience. (F). Prerequisite: Admission to Surgical Technology Program. Co-Requisite Course(s): SURG 100 and SURG 101 and SURG 108 and SURG 121 and SURG 122.
SURG110	Advanced Surgical Procedures	6	This course introduces the student to intermediate and advanced surgical procedures with a primary focus on the sequential steps involved in these procedures, higher difficulty cases, and specialized instrumentation. Surgical anatomy, physiology, and pathophysiology will be addressed. The biomedical sciences will also be addressed: robotics, physics, computers, and electricity. (Sp). Prerequisite: Successful completion of 1st semester of the Surgical Technology Program. Co-Requisite Course(s): SURG 111 and SURG 112 and SURG 123 and SURG 124.
SURG111	Surgical Specialty/Prof Prep	2	This course focuses on preparing the student for life-long learning. An emphasis will be placed on advanced technologies, a look to the future of tele-surgery, the operating room ten years out, and advances in specialty surgeries. Preparation for the national certification exam will be provided in a review of core components. (Sp). Prerequisite: Successful completion of 1st semester of the Surgical Technology Program. Co-Requisite Course(s): SURG 110 and SURG 112 and SURG 123 and SURG 124.

COURSE	TITLE	CREDIT HOURS	TEXT
SURG112	Surgical Clinical Compliance	1	This course includes weekly conversations relative to the clinical experience, tracking of required surgical cases, and competencies reviewed for satisfactory compliance. The instructor will review clinical site evaluations and documentation, along with validation by students, preceptors, and faculty. A review component for surgical anatomy and surgical procedures will comprise a portion of this course. (Sp). Prerequisite: Successful completion of 1st Semester of the Surgical Technology Program. Co-Requisite Course(s): SURG 110 and SURG 111 and SURG 123 and SURG 124.
SURG121	Applied Surgical Techniques I	2	This course covers the application of theory in the use of surgical supplies and equipment which will prepare students to scrub in for actual surgical procedures. A specified number of competencies will need to be successfully completed to advance to SURG122. (F). Prerequisite: Admission to Surgical Technology Program. Co-Requisite Course(s): SURG 100 and SURG 101 and SURG 108 and SURG 109.
SURG122	Applied Surgical Techniques II	3	This course prepares students for the actual operating room experience through application of theory and clinical skills in mock surgical procedures. Basic surgical procedures will be presented, with some hands-on experience utilizing surgical simulators. (F). Prerequisite: Pass grade in SURG 121 or concurrently. Co-Requisite Course(s): SURG 100 and SURG 101 and SURG 108 and SURG 109.
SURG123	Applied Surgical Techiq III	5	This clinical session at a hospital provides the student with the application of theory and clinical skills in basic and advanced surgical procedures and specialty areas. (Sp). Prerequisite: Successful completion of 1st semester of the Surgical Technology Program. Co-Requisite Course(s): SURG 110 and SURG 111 and SURG 112.
SURG124	Applied Surgical Techniques IV	5	A continuation of SURG123, this course is a clinical session at a hospital. It covers the application of theory and clinical skills in basic and advanced surgical procedures and surgical specialty areas. (Sp). Prerequisite: Minimum 2.5 in SURG 123 or concurrently. Co-Requisite Course(s): SURG 110 and SURG 111 and SURG 112.
SURG150	Surgical Tech Special Topics	.25 to 8	This course provides seminars for health professionals such as surgical technologists and operating room nurses. Specific up-to-date course content will vary with each seminar and will be related to the surgical team, surgical procedures, or surgical instrumentation. (F,Sp,Su). Prerequisite: Determined by Section.
TDTP110	Truck Driver Training I	3	This is the initial course in a sequence of three. This course is intended to begin preparing the student for the State of Michigan CDL written exam and includes a review of D.O.T. rules and proper driver's log book reporting. Vehicle activities include vehicle inspection, drop and hook, and initial driving on secured roadways. (F,Sp,Su). Prerequisite: Department Approval and Department of Transportation Physical.
TDTP111	Truck Driver Training II	3	This is the second course in a sequence of three. Students will operate the vehicles on the driving range and local roads, developing the skills necessary to interact with highway traffic. Students must pass the CDL written test and obtain their temporary instructional permits during this course. (F,Sp,Su). Prerequisite: Department Approval and Department of Transportation Physical.
TDTP112	Truck Driver Training III	3	This is the final course in the Truck Driver Training Program. The students will complete range driving and backing, do local highway driving, and complete an extensive road trip. The CDL third-party exam will be administered during this course. (F,Sp,Su). Prerequisite: Department Approval and Department of Transportation Physical.
TDTP201	Truck Driver Internship	2 to 4	This course is a work site experience. Students will gain career experience by working with an employed truck driver who serves as a mentor. The student gains experience by applying knowledge gained in the classroom and in the College's truck fleet. (F,Sp,Su). Prerequisite: Minimum 2.0 in TDTP 112 and Department Approval.
TDTP220	Special Topics/Truck Driver	.25 to 8	This course will feature topics related to the professional trucking industry. The lectures and labs will allow participants to explore a wide variety of topics that will enhance their ability to find employment within this expanding industry. (F,Sp,Su). Prerequisite: Department Approval and Department of Transportation Physical.
THEA110	Introduction to Theatre	3	Introduction to Theatre includes definition and analysis of theatrical art, incorporating script analysis, theatre history, the relationship between theatre and the culture from which it comes, and the roles of theatre practitioners. (F,Sp,Su). Prerequisite: Reading Level 5.
THEA114	Intro to Technical Theatre	3	Introduction to design stagecraft for performing arts: basic elements of design and their relationship to performance, introduction to color theory - both paint and light, development of design concept, fundamentals of drafting, scale plan analysis, tool usage, shop safety, stage lighting, light plot interpretation, understanding organization of backstage productions. (F). Prerequisite: None.

COURSE	TITLE	CREDIT HOURS	TEXT
THEA120	Introduction to Acting	2	Explores various acting techniques and introduces the beginning student to the skills necessary to maintain a sustained dramatic performance. Theatre games and improvisation exercises to overcome stage fright and to develop concentration and listening skills are heavily emphasized. Students present final short scene. (F,Sp,Su). Prerequisite: None.
THEA124	Stage Lighting and Electricity	3	Beginning studies in basic electricity and lighting as they relate to the stage. Students will learn fundamentals of electricity, metering, dimming circuits, physics of light and optics, instrumentation, reading of a plot, and various schedules. The student will then apply them in a theater setting. (F). Prerequisite: None.
THEA131	Studio Theatre Performance I	1	Course includes rehearsal, performance, and evaluation of a contemporary script. Focus is on an understanding and implementation of skills acquired in THEA 120 and the relationships experienced between actor and director. (F,Sp). Prerequisite: Department Approval.
THEA132	Studio Theatre Performance II	1	Rehearsal, performance, and evaluation of a script which incorporates heightened language and movement. Focus is on expanding the actor's physical and vocal expressiveness. (Sp,Su). Prerequisite: Department Approval.
THEA141	Acting I - Contemporary	2.5	Fundamentals of acting, including improvisational techniques; the physical, vocal, and internal development of character; analysis and scoring by beats of a contemporary script. (F). Prerequisite: Minimum 2.0 in THEA 120 or Department Approval.
THEA143	Stage Voice for the Actor	3	Course will cover exercises in vocal production: posture, support, relaxation, resonance, projection, and enunciation. Focus will be on exercises to develop vocal flexibility from Rodenburg, Linklater, and/or Berry techniques. Students will experience vocal techniques which lead to greater emotional awareness and responsiveness. (Sp,Su). Prerequisite: None.
THEA144	Stage and Arena Rigging	3	An introduction to rigging for the entertainment industry. The student will learn fundamentals of high steel, deck, grid, and stationary rigging. Rigging safety practices, safety hardware, rigging equipment, rigging hardware, and calculation of loads for the structure and hardware are covered. The student will apply these practices and equipment to stage and arena settings. (Sp). Prerequisite: None. Recommended: Basic Algebra.
THEA150	Acting for the Camera	3	Acting techniques and methods relevant to camera work will be explored. Student work is videotaped and critiqued. Acting for the Camera applies and builds on fundamentals established in Introduction to Acting. (Sp). Prerequisite: Department Approval.
THEA160	Stage Combat	2	Students learn to use a variety of weapons and hand to hand combat styles on stage. Students learn the style of combat used in theatre/film industry. Students explore fight scenes, basics of mechanics of choreographing fight scenes, and are instructed on basic safety procedures for choreographing/executing fight sequences. (F,Sp,Su). Prerequisite: None. Recommended: THEA 120.
THEA171	Play Analysis	3	An analysis of modern contemporary classics of the theatre. The student will read and analyze a minimum of four contemporary scripts from Ibsen to Shepard. The student will develop a comprehensive production concept for one of these scripts. (F,Sp). Prerequisite: Minimum 2.0 in THEA 120 or Department Approval.
THEA173	Movement for the Actor	2	Course will cover strategies developing student's physical endurance, reflect, flexibility, and grace. Students will learn the human inner experience in the sphere of human silence. Students may explore movement to music, mime, and/or dance styles and techniques from world cultures. (Sp,Su). Prerequisite: None.
THEA181	Improvisation	2.5	By using the improvisational techniques of mask work and developmental exercises, this course will train the student in long-term, in-depth character development. (Sp,Su). Prerequisite: None.
THEA210	Theatre History	4	Examines the history of Western Theatre, including the literature, performance conventions, the physical theatre, and major figures from the Greek to Modern eras. Required for all majors. (F,Sp). Prerequisite: Reading Level 5 and Writing Level 6. Recommended: THEA 110.

COURSE	TITLE	CREDIT HOURS	TEXT
THEA220	Play Directing	3	Introduction to the fundamentals of directing a play, including play analysis, stage composition and working with actors. Practical experience through scenework and class exercises will be emphasized. Students will demonstrate their mastery of the principles taught by directing and presenting a short one-act play for an audience. (F). Prerequisite: Minimum 2.0 in THEA 110. Recommended: THEA 120 or THEA 210.
THEA223	Independent Study in Theater	1 to 3	An opportunity for self-directed learners to explore topics related to, but not taught in the curriculum. Students spend at least two hours per week for each credit. A detailed proposal must be submitted by the student for approval by the Department and supervising instructor prior to registration. (F,Sp,Su). Prerequisite: Department Approval.
THEA224	Special Subjects in Theater	1 to 4	This seminar allows students to take courses in various theater techniques. It offers either state-of-the-art techniques or an opportunity to work with professionals. Seminars include topics such as stage combat and new techniques in acting. (F,Sp,Su). Prerequisite: Determined by Section.
THEA233	Studio Theatre Performance III	2	Students will rehearse and perform a Shakespeare play. (F). Prerequisite: Minimum 2.0 in THEA 132. Co-Requisite Course(s): THEA 240.
THEA235	Studio Theatre Performance IV	3	This course provides the second-year Theatre major with an opportunity to act in a mainstage production. Through rehearsal, analysis and research, the student will intensively explore a character in a modern Realistic play. (Sp). Prerequisite: Minimum 2.0 in THEA 233. Co-Requisite Course(s): THEA 241.
THEA240	Acting-Shakespeare	2.5	Students will explore the unique demands of acting and speaking Shakespeare and the qualities of his verse, including alliteration, assonance, rhymes, antithesis, puns, onomatopoeia, imagery, and iambic rhythms. Status, social, and historical context will be addressed. (F). Prerequisite: Minimum 2.0 in THEA 143. Co-Requisite Course(s): ENGL 290 and THEA 233.
THEA241	Acting-Advanced Realism	2.5	Explores Stanislavski's System in detail. Students apply the System to the creation of a character in a Mainstage production. When appropriate, methods developed by Stanislavski's Russian and American adapters will be explored. (Sp). Prerequisite: Minimum 2.0 in THEA 240. Co-Requisite Course(s): THEA 235.
THEA283	Audition Workshop	2	Students will learn audition and resume preparation and will prepare and polish two contrasting monologues for auditions. Students will learn the audition and application processes for advanced training. (Sp). Prerequisite: Department Approval.
THEA285	Stage Makeup	2	A course in the application of stage makeup to develop a character and to assist the actor in sustaining the character in performance. Emphasizes skills in the use of different kinds of makeup, hairstyling, and appearance changes. (Sp). Prerequisite: None.
TSEM100	Technical Related Seminar	.25 to 5	This course will cover a variety of topics in technical related fields. For individuals already in the environment seeking to upgrade their skills or anyone looking to be employed in a particular career field. (F,Sp,Su). Prerequisite: None.
WELD102	Industrial/Construction Safety	2	This course covers safety in the industrial workplace and on construction worksites. Included are local, state and federal safety regulations. The focus will be on the prevention of accidents but will teach the correct response if an accident should occur. First aid, CPR/AED certificates will be issued upon successful completion. (F, Sp, Su). Prerequisite: Reading Level 3 and Writing Level 2. Course Note: This course requires students to be certified in CPR and First Aid as part of the course grade. Training will occur as part of traditional on-campus sections. Online students have the option of attending CPR and First Aid sessions at LCC's West Campus. Students who cannot travel to LCC will need to make other arrangements to become certified.
WELD103	Combination Welding	4	This is a beginning theory and practice course which will introduce the safe operations and applications of oxyacetylene welding, torch cutting, plasma cutting, brazing and shielded metal arc welding. Practice will consist of these methods of joining steel in the horizontal, flat and vertical positions. Destructive testing will also be provided. (F, Sp, Su). Prerequisite: None. Course Note: Students need to bring their own safety glasses, pliers, leather welding gloves and leather work boots to start welding on the first day of class.
WELD103A	Welding Safety & Fundamentals	0.4	This module covers welding safety and introduces basic concepts in welding, including welding nomenclature, types of weld joints, and welding positions. (F, Sp, Su). Prerequisite: None.

COURSE	TITLE	CREDIT HOURS	TEXT
WELD103B	Gas Welding	0.8	This module covers basic gas welding procedures and all applications of welding on steel. (F, Sp, Su). Prerequisite: Minimum 4.0 in WELD 103A.
WELD103C	Brazing and Soldering	0.4	This module covers brazing and soldering for a variety of metals. (F, Sp, Su). Prerequisite: Minimum 4.0 in WELD 103A.
WELD103D	Oxyacetylene Cutting (OAC)	0.3	This module covers the application and safety of oxyacetylene cutting on a variety of metal thicknesses and various shapes of plate and pipe. (F, Sp, Su). Prerequisite: Minimum 4.0 in WELD 103A.
WELD103E	SMAW Fundamentals	0.3	This module covers basic principles of Shielded Metal Arc Welding (SMAW) setup and safety, filler metal selection of electrodes, weldability of metals, and SMAW defects. (F, Sp, Su). Prerequisite: Minimum 4.0 in WELD 103A.
WELD103F	SMAW E6010	0.8	This module covers basic principles and applications of Shielded Metal Arc Welding (SMAW). Topics include flat, horizontal, and vertical welding with 6010 electrodes. (F, Sp, Su). Prerequisite: Minimum 3.0 in WELD 103E.
WELD103G	SMAW E7018	0.8	This module covers basic principles and applications of Shielded Metal Arc Welding (SMAW). Topics include flat, horizontal, and vertical welding with 7018 electrodes. (F, Sp, Su). Prerequisite: Minimum 3.0 in WELD 103E.
WELD103H	Plasma Arc/Air Carbon Arc Cut	0.2	This module covers basic principles and applications of plasma arc cutting and air carbon arc gouging. Topics include safety, setup, and operation of PAC and CAD-A equipment. (F, Sp, Su). Prerequisite: Minimum 4.0 in WELD 103E.
WELD105	Advanced ARC Welding	4	Students will develop the skills necessary to produce quality multiple pass fillet and groove welds on steel plates. Conventional and low hydrogen electrodes are used in preparation of passing performance tests in all positions. Destructive testing methods, weld profiles and welding symbols as related to arc welding are introduced. (F, Sp, Su). Prerequisite: Minimum 2.0 in WELD 103 (previously WELD 100). Course Note: Students need to bring their own safety glasses, pliers, leather welding gloves and leather work boots to start welding on the first day of class.
WELD105A	Intro to Advanced Arc Welding	0.5	This module draws upon SMAW fundamentals to help students transition to advanced arc welding projects. Students practice with overhead fillet welds and are introduced to the proper fit up of groove welds. (F, Sp, Su). Prerequisite: Minimum 3.0 in WELD 103 (previously WELD 100).
WELD105B	Open Root Groove Welds	1	This module introduces open root groove welds, including flat, horizontal, vertical, and overhead positions. This module also helps learners develop the skills needed for pipe welding. (F, Sp, Su). Prerequisite: Minimum 3.0 in WELD 105A.
WELD105C	SMAW/Backer Plates & Testing	1.3	This module covers 7018 electrode with backer plates for structural welding. Welding Code AWS D1.1 is used as a guideline. (F, Sp, Su). Prerequisite: Minimum 3.0 in WELD 105A.
WELD105D	AWS D1.1 Qual Rev SMAW 1G	0.3	In this module, the learner can practice for the AWS D1.1 Qualification Test for the 1G weld with backer. The module is facilitated by an instructor/lab technician who can answer any questions and provide guidance as needed. The actual certification exam is not included as a part of this module. (F, Sp, Su). Prerequisite: Minimum 4.0 in WELD 105C.
WELD105E	AWS D1.1 Qual Rev SMAW 2G	0.3	In this module, learner can practice for the AWS D1.1 Qualification Test for the 2G weld with backer. The module is facilitated by an instructor/lab technician who can answer any questions and provide guidance as needed. The actual certification exam is not included as a part of this module. (F, Sp, Su). Prerequisite: Minimum 4.0 in WELD 105C.
WELD105F	AWS D1.1 Qual Rev SMAW 3G	0.3	In this module, the learner can practice for the AWS D1.1 Qualification Test for the 3G weld with backer. The module is facilitated by an instructor/lab technician who can answer any questions and provide guidance as needed. The actual certification exam is not included as a part of this module. (F, Sp, Su). Prerequisite: Minimum 4.0 in WELD 105C.
WELD105G	AWS D1.1 Qual Rev SMAW 4G	0.3	In this module, the learner can practice for the AWS D1.1 Certification Exam for the 4G weld with backer. The module is facilitated by an instructor/lab technician who can answer any questions and provide guidance as needed. The actual certification exam is not included as a part of this module. (F, Sp, Su). Prerequisite: Minimum 4.0 in WELD 105C

COURSE	TITLE	CREDIT HOURS	TEXT
WELD110	Gas Metal ARC Welding	4	Provides technical understanding and applications of gas metal arc welding and flux cored arc welding. Fundamentals, safety, equipment adjustments, metal transfers and shielding gases will be covered. Develops manual skill in all positions on different thicknesses and types of metals, including mild steel, aluminum and stainless steel. (F,Sp,Su). Prerequisite: None. Course Note: Students need to bring their own safety glasses, pliers, leather welding gloves and leather work boots to start welding on the first day of class.
WELD110A	GMAW Basics	0.25	This module introduces the basic principles of Gas Metal Arc Welding (GMAW), including setup, safety, and troubleshooting. (F,Sp,Su). Prerequisite: Minimum 3.0 in WELD 103 (previously WELD 100).
WELD110B	GMAW on Steel	0.5	This module covers basic principles and applications of Gas Metal Arc Welding (GMAW). Welds include lap, tee, and butt in the flat, horizontal, vertical, and overhead positions. (F,Sp,Su). Prerequisite: Minimum 3.0 in WELD 110A.
WELD110C	Pulsed Arc Metal/Axial Spray	0.25	This module introduces pulsed arc metal and axial spray metal transfer welding processes. Pulsed arc projects include a horizontal lap and tee. Axial spray metal transfer projects include horizontal lap, tee, and flat groove with backer. (F,Sp,Su). Prerequisite: Minimum 3.0 in WELD 110B.
WELD110D	GMAW on Aluminum	0.25	This module covers basic principles and applications of Gas Metal Arc Welding (GMAW) on aluminum. Welds include lap, tee, and butt in the flat position. (F,Sp,Su). Prerequisite: Minimum 3.0 in WELD 110A.
WELD110E	GMAW on Stainless Steel	0.25	This module covers basic principles and applications of GMAW on stainless steel. Welds include lap, tee, and butt in the flat position. (F,Sp,Su). Prerequisite: Minimum 3.0 in WELD 110A.
WELD110F	FCAW Fillet Welds	0.5	This module covers basic principles and applications of Flux Cored Arc Welding (FCAW) on mild steel. Welds include lap and tee in all positions. (F,Sp,Su). Prerequisite: Minimum 3.0 in WELD 110B.
WELD110G	FCAW Groove Welds with Backer	1	This module covers basic principles and applications of Flux Cored Arc Welding (FCAW) on mild steel. Welds include groove welds with backers in the flat, horizontal, vertical, and overhead positions. (F,Sp,Su). Prerequisite: Minimum 3.0 in WELD 110F.
WELD110H	AWS D1.1 Qualif Review FCAW 1G	0.25	In this module, the learner can practice for the AWS D1.1 Qualification Test for the FCAW 1G weld with backer. Welder Performance Qualification is the demonstration of a welder's ability to produce welds meeting very specific prescribed standards. (F,Sp,Su). Prerequisite: Minimum 3.0 in WELD 103 (previously WELD 100).
WELD110I	AWS D1.1 Qualif Review FCAW 2G	0.25	In this module, the learner can practice for the AWS D1.1 Qualification Test for the FCAW 2G weld with backer. Welder Performance Qualification is the demonstration of a welder's ability to produce welds meeting very specific prescribed standards. (F,Sp,Su). Prerequisite: Minimum 3.0 in WELD 103 (previously WELD 100).
WELD110J	AWS D1.1 Qualif Review FCAW 3G	0.25	In this module, the learner can practice for the AWS D1.1 Qualification Test for the FCAW 3G weld with backer. Welder Performance Qualification is the demonstration of a welder's ability to produce welds meeting very specific prescribed standards. (F,Sp,Su). Prerequisite: Minimum 3.0 in WELD 103 (previously WELD 100).
WELD110K	AWS D1.1 Qualif Review FCAW 4G	0.25	In this module, the learner can practice for the AWS D1.1 Qualification Test for the FCAW 4G weld with backer. Welder Performance Qualification is the demonstration of a welder's ability to produce welds meeting very specific prescribed standards. (F,Sp,Su). Prerequisite: Minimum 3.0 in WELD 103 (previously WELD 100).
WELD111	Gas Tungsten ARC Welding	4	Students will develop the skills, principles and applications of gas tungsten arc welding. Welds will be done on different thickness of ferrous and non-ferrous metals in all positions. Proper material cleaning, fit up and safety are also introduced. (F,Sp,Su). Prerequisite: Minimum 2.0 in (WELD 103 (previously WELD 100) or AUTO 100 or AUTO 114). Course Note: Students need to bring their own safety glasses, pliers, leather welding gloves and leather work boots to start welding on the first day of class.
WELD115	Robotic MIG Welding	3	Students will learn to program a MIG welding robot through a teach pendant, edit programs, set weld schedules, as well as learn some basic fixture building skills. This course also provides fundamental safety precautions while programming and operating the robotic component. (F, Sp). Prerequisite: Reading Level 3 and Writing Level 2 and Math Level 3. Course Note: Students need to bring their own safety glasses, pliers, leather welding gloves and leather work boots to start welding on the first day of class.

COURSE	TITLE	CREDIT HOURS	TEXT
WELD120	Structural Fab & Inspection	4	Introduction to steel fabrication in accordance with the American Welding Society Structural Welding Code D1.1 applications and requirements. The student will be introduced to the numerous destructive and nondestructive methods of welding inspections. Satisfactory completion of this course will assist the student in passing a welding certification test. (F,Sp). Prerequisite: Minimum 2.0 in WELD 105 (previously WELD 101). Course Note: Students need to bring their own safety glasses, pliers, leather welding gloves and leather work boots to start welding on the first day of class.
WELD120A	Fillet Welds/Weld Procedures	0.75	In this module, students learn to write AWS welding procedures; weld multi-pass fillet welds; steel saw cut tee joint specimens; polish and acid etch fillet weld profiles; perform AWS fillet weld break tests; identify arc welding consumables and power sources; and apply safety procedures in steel fabrication. (F,Sp,Su). Prerequisite: Minimum 2.0 in WELD 105 (previously WELD 101).
WELD120B	Plate Fabr/Weight/Weld Costs	1	In this module, students learn how to calculate weight for structural steel shapes and how to determine welding costs. Topics also include applying heat to a weldment to straighten and control distortion. Fabrication of a scaled down plate girder will be used to demonstrate heat straightening and distortion control. (F,Sp,Su). Prerequisite: Minimum 3.0 in WELD 120A.
WELD120C	Groove Welds/Pre-Qual Joints	0.75	In this module, students learn to write AWS (American Welding Society) pre-qualified welding procedures, perform AWS unlimited thickness tests, and perform AWS destructive tests to determine the soundness of a weld. (F,Sp,Su). Prerequisite: Minimum 3.0 in WELD 120B.
WELD120D	Stair Fabrication/Weld Symbols	1	This module introduces the layout and fabrication of steel stair stringers and tread pans; assembly of stringers and tread pans to fabricate a flight of steel stairs; reading shop drawings to interpret welding symbols; and performing submerged arc welding. (F,Sp,Su). Prerequisite: Minimum 3.0 in WELD 120C.
WELD120E	AWS Tests/NDT and DT	0.5	In this module, students learn how to perform AWS Limited Qualification tests in vertical up and overhead positions and perform root and face bend destructive testing to determine soundness of the welds. Methods of non-destructive testing are also covered. (F,Sp,Su). Prerequisite: Minimum 3.0 in WELD 120D.
WELD125	Structural Blpt Reading/Weld	2	Blueprint and welding symbols are the universal language of the welding industry. This course is for students, apprentices, technicians and others who must develop the ability to read and accurately interpret blueprints. Teaches awareness of the advancement in metallurgy, welding processes, consumables and strict code enforcement used in industry today. (F). Prerequisite: Minimum 2.0 in MATH 050 or Math Level 4.
WELD125A	Interpreting Welding Prints	0.5	This module provides a study of the principles of reading and interpreting welding symbols and codes as they apply to the industrial welding blueprint. Drawings studied include basic lines and shapes, views, sectional views, and auxiliary views. (F,Sp,Su). Prerequisite: Minimum 2.0 in MATH 050 or Math Level 4.
WELD125B	Welding Symbols	1.5	This module provides a study of standard welding symbols and their components and welding abbreviations as defined by the American Welding Society. Students learn the types, purposes, and uses of welds, and how weld joints, dimensioning, contours, and finishing are represented in welding symbols in industrial prints. (F,Sp,Su). Prerequisite: Minimum 3.0 in WELD 125A.
WELD140	Creative Welding	2	This is a course for people with an interest in artwork in a metal medium. Participants will become familiar with welding, cutting, and basic design processes for the purpose of exploring creative expression. (F,Sp). Prerequisite: None. Recommended: Course work or experience in art/design. Course Note: Students need to bring their own safety glasses, pliers, leather welding gloves and leather work boots to start welding on the first day of class.
WELD170	Special Topics in Welding	.25 to 8	This course offers students the opportunity to learn new or advanced skills in welding and other related topics. Specific content may vary with each offering but will be related to the Welding Program and profession. (F,Sp,Su). Prerequisite: None.
WELD191	Welding Project Lab	1 to 4	An opportunity for students to expand upon welding skills in maintenance welding, production welding, resistance welding and/or tool and die welding, depending on the direction the student would like to take his/her welding skills. Actual projects must be discussed and agreed upon by both the instructor and the student. (F,Sp,Su). Prerequisite: Department Approval.

COURSE	TITLE	CREDIT HOURS	TEXT
WELD201	Tool and Die Welding	3	Theory and practice methods involved in welding various alloyed metals, preheating and postheating of metals, recognition of materials, alloying elements and their effects. The proper usage of air, oil and water hardening steels will also be covered. (F,Sp). Prerequisite: Minimum 2.0 in (WELD 105 (previously WELD 101) and WELD 111). Course Note: Students need to bring their own safety glasses, pliers, leather welding gloves and leather work boots to start welding on the first day of class.
WELD205	Pipe Welding	4	Theory, cutting, fit up and practice on different sizes of pipe using shielded metal arc welding. Varied weld and base metal testing methods are used to the strict code requirements. Focus on low hydrogen type electrodes in groove welds in the 2G, 5G, and 6G positions. (F). Prerequisite: Minimum 2.0 in WELD 105 (previously WELD 101). Course Note: Students need to bring their own safety glasses, pliers, leather welding gloves and leather work boots to start welding on the first day of class.
WELD205A	Pipe Weld Safety/Fundamentals	0.5	This module examines safety and technical skills in the pipe welding trade. Students will review welding 3G and 4G open root vee grooves on 3/8 inch plate to prepare for pipe welding. (F,Sp,Su). Prerequisite: Minimum 2.0 in WELD 105 (previously WELD 101).
WELD205B	Pipe Weld Horiz Position 2G	1	In this module, students develop the skills to perform welds on open root mild steel pipe in the 2G position, using E6010 root pass followed by E7018 filler and cover passes, and according to ASME standards. (F,Sp,Su). Prerequisite: Minimum 3.0 in WELD 205A.
WELD205C	Pipe Weld Horiz Fixed Pos 5G	1	In this module, students develop the skills to perform welds on open root mild steel pipe in the 5G position, using E6010 root pass followed by E7018 filler and cover passes, and according to ASME standards. (F,Sp,Su). Prerequisite: Minimum 3.0 in WELD 205A.
WELD205D	Pipe Weld Test Position 6G	1.25	This module provides the training necessary to develop welding skills to make high quality welds on open root mild steel pipe in the 6G position, using E6010 root pass followed by E7018 filler and cover passes. (F,Sp,Su). Prerequisite: Minimum 3.0 in WELD 205B.
WELD205E	Pipe Weld 1G Rotated GTAW	0.25	This module examines the training necessary to develop welding skills to make high quality welds on open root mild steel pipe in the 1G roll position with the GTAW process. (F,Sp,Su). Prerequisite: Minimum 2.0 in (WELD 105 (previously WELD 101) and WELD 111).
WELD210	Aircraft Welding	2	Presents welding applications and methods used in repairs and inspection of aircraft structures in accordance with approved aviation maintenance techniques. (F,Sp). Prerequisite: Department Approval. Course Note: Students need to bring their own safety glasses, pliers, leather welding gloves and leather work boots to start welding on the first day of class.
WELD250	Welding Internship	3	This course provides welding students with practical work experience in industry. Students work for an employer in a supervised environment which provides an opportunity to apply knowledge and skills learned in the classroom and lab to an actual job situation. (F,Sp). Prerequisite: Department Approval. Recommended: 2.5 GPA or greater.
WRIT100	Writing Laboratory	4	Designed to teach fundamental writing skills and to introduce the student to the writing process. Emphasizes sentence structure, components of a paragraph, and critical reading with written response. Intended for students whose writing skills lie within the WRIT Level 1 score range on the College Placement Test. (F,Sp,Su). Prerequisite: Reading Level 1 and Writing Level 1. Course Note: Due to the limited class size of WRIT 100, the Center for Transitional Learning may administratively withdraw any student with a writing level higher than 2. Please contact the Center for Transitional Learning Coordinator at (517) 483-1061 if you have questions about placement into WRIT 100.
WRIT110	Confidence in Writing	4	Designed to help students understand the writing process, reduce writing anxiety, and develop basic writing skills. Emphasizes planning, composing, and revising strategies for experiential writing. Provides frequent writing practice in a supportive workshop environment. Students who earn exit competency of 2.5 will have a writing skill level of 4. (F,Sp,Su). Prerequisite: Reading Level 2 and Writing Level 2. Recommended: Basic word processing skills. Course Note: Students must attend the first week of class to avoid being dropped.
WRIT114	Business English	3	This course is designed to review all parts of grammar, punctuation, and sentence structure. Special emphasis will be given to rules covering proper usage of punctuation, capitalization, possessives, number usage, plurals, and mechanics for written business communication. Students taking WRIT 124 or WRIT 127 may find Business English a useful concurrent course. (F,Sp,Su). Prerequisite: Reading Level 4 and Writing Level 4.

COURSE	TITLE	CREDIT HOURS	TEXT
WRIT117	Writing Preparation	4	Designed to help students improve their writing in preparation for transfer-level academic courses. Students who earn exit competency of 2.5 will have a writing skill level of 6. (F,Sp,Su). Prerequisite: Reading Level 4 and Writing Level 4. Recommended: Basic word processing skills. Course Note: Students must attend the first week of class to avoid being dropped.
WRIT118	Personal Writing	3	Explores the various forms of personal writing (diaries, journals, letters, personal narratives, and autobiography) through written exercises and selected readings. The student's observations and life experiences are the focus of written assignments. Emphasizes language, style, and tone appropriate to the different forms of personal writing. (F,Sp). Prerequisite: Reading Level 3 and Writing Level 4.
WRIT119	Writing Skills Review	1	Designed to help WRIT121-122 composition students, and others, improve their basic sentence and mechanics skills by providing intensive writing and editing practice in a workshop setting. (F,Sp,Su). Prerequisite: Reading Level 5 and Writing Level 6. Recommended: Concurrent enrollment in WRIT 121, 122, 124, 127 or ENGL 122.
WRIT121	Composition I	4	Composition I is the study and practice of expository discourse to help students write more effectively. It emphasizes writing process, critical thinking, content development, organization, and style. Students will select their best work for their portfolio, which will be externally assessed. (F,Sp,Su). Prerequisite: Reading Level 5 and Writing Level 6. Course Note: Students must attend the first week of class to avoid being dropped. Course Note: Students must attend the first week of class to avoid being dropped.
WRIT122	Composition II	4	Builds upon the writing skills developed in WRIT121 to help students write argumentative essays which use logical support and appropriate documentation. Emphasizes research techniques and use of sources, and the development, structure, and style of the research paper. Some sections use computer classrooms. Others are offered over the Internet or interactive television. (F,Sp,Su). Prerequisite: Minimum 2.0 in (WRIT 121 or WRIT 131) or (Reading Level 5 and Writing Level 8). Course Note: Students must attend the first week of class to avoid being dropped.
WRIT124	Technical Writing	3	A college-level course in the study and practice of technical writing in a variety of formats for select audiences. Covers writing instructions, mechanism descriptions, technical definitions, as well as business letters, persuasive memos, job application materials, and basic research techniques. Students learn basic research techniques. Students will work individually and collaboratively. (F,Sp,Su). Prerequisite: Reading Level 5 and Writing Level 6. Recommended: Computer and/or keyboarding experience. Course Note: Students must attend the first week of class to avoid being dropped.
WRIT127	Business Writing	3	College-level study of the theory and practice of business communication in a variety of forms, with emphasis on letters, memoranda and written reports, including research-based reports. Also covers job applications, resumes, and collaborative oral reports. (F,Sp,Su). Prerequisite: Reading Level 5 and Writing Level 6. Recommended: Computer and/or keyboarding experience. Course Note: Students must attend the first week of class to avoid being dropped.
WRIT131	Honors Composition I	4	Honors Composition I is the study and practice of expository discourse to help students write more effectively. It emphasizes writing process, critical thinking, content development, organization, and style. Students will select their best work for their portfolio, which will be externally assessed. (F,Sp). Prerequisite: Writing Level 7.
WRIT132	Honors Composition II	4	Builds upon the writing skills developed in WRIT121 to help students write argumentative essays which use logical support and appropriate documentation. Emphasizes research techniques and use of sources, and the development, structure, and style of the research paper. Some sections use computer classrooms. Others are offered over the Internet or interactive television. (F,Sp). Prerequisite: Minimum 3.5 in (WRIT 121 or WRIT 131).
WRIT260	Creative Writing I	3	This course is designed to help students develop expressive abilities in writing poetry and short stories. Emphasizes narrative modes of the short story, and free verse forms and traditional forms of poetry. Students read and analyze models from masters in fiction and poetry. (F,Sp). Prerequisite: Minimum 2.0 in (WRIT 121 or WRIT 131).
WRIT264	Nonfiction Writing	3	Study of nonfiction writing with a focus on marketing freelance writing. Students review a variety of effective writing techniques, study marketing information for their particular fields, including analysis of potential publishers and query letters, and discuss their writing in a workshop setting. Students prepare submission materials for editors. Word processing required. (F,Sp,Su). Prerequisite: Minimum 2.0 in (WRIT 121 or WRIT 131).

COURSE	TITLE	CREDIT HOURS	TEXT
WRIT270	Creative Writing II	3	Emphasizes improving the ability to write effective poems, short stories, and novellas. Students select their own subjects and receive feedback in a workshop environment. (F,Sp). Prerequisite: Minimum 2.0 in WRIT 260.
WRIT276	Lyric Writing	3	This course introduces students to the craft of writing song lyrics. The work of professional songwriters as well as the students' work will be examined and discussed. Students are required to attend live performances. (F). Prerequisite: Minimum 2.0 in (WRIT 121 or WRIT 131 or WRIT 127).
WRIT278	Writing the Novel	3	This course addresses all aspects of writing a novel. Classroom sessions will emphasize finding a narrative voice, establishing sturdy characters, and developing a workable plot. Students will receive feedback on their fiction in a workshop setting. Publishing information will be provided, but will not be a focus of the course. (F). Prerequisite: Minimum 2.0 in (WRIT 260 or WRIT 264).
WRIT279	Prose Style	3	An advanced study of non-fictional prose writing. Extensive directed practice helps experienced writers make their own writing clear, precise, direct, and graceful. Workshop sessions include a study of the expectations and choices in various types of writing, and of the relationships among purpose, structure, words, sentences, grammar, punctuation, and style. (Sp). Prerequisite: Minimum 2.0 in (WRIT 121 or WRIT 131).
WRIT295	Independent Study in Writing	1 to 4	An opportunity for self-directed learners to explore topics related to, but not taught in the curriculum. Students spend at least two hours per week for each credit. A detailed proposal must be submitted by the student for approval by the Department and supervising instructor prior to registration. (F,Sp,Su). Prerequisite: Department Approval.
WRTR101	Writing Practice I	1	May be taken concurrently with other writing courses to provide extra individualized instruction and practice. (F,Sp,Su). Prerequisite: Reading Level 1 and Writing Level 1 and Department Approval.
WRTR102	Writing Practice II	2	May be taken concurrently with other writing courses to provide extra individualized instruction and practice. (F,Sp,Su). Prerequisite: Reading Level 1 and Writing Level 1 and Department Approval.
WRTR103	Writing Practice III	3	May be taken concurrently with other writing courses to provide extra individualized instruction and practice. (F,Sp,Su). Prerequisite: Reading Level 1 and Writing Level 1 and Department Approval.