

**DDT 236. DESIGN PROJECT. – 3 hours.**

PREREQUISITE: Advisor approval.

This course allows the student to plan, execute, and present results of an individual design project. Emphasis is placed on attainment of skills related to a project agreed upon by the Instructor and student. The student will be able to demonstrate and apply competencies identified and agreed upon between the student and instructor.

**ECONOMICS (ECO)****ECO 231. PRINCIPLES OF MACROECONOMICS.**

– 3 hours. A

This course is an introduction to macroeconomic theory, analysis, and policy applications. Topics include the following: scarcity, demand and supply, national income analysis, major economic theories concerning monetary and fiscal policies as stabilization measures, the banking system and other economic issues or problems including international trade.

**ECO 232. PRINCIPLES OF MICROECONOMICS.**

– 3 hours. A

This course is an introduction of the microeconomic theory, analysis, and applications. Topics include scarcity; the theories of consumer behavior, production and cost, markets, output and resource pricing, and international aspects of microeconomics.

**ELECTRICAL TECHNOLOGY (ELT)****ELT 114. RESIDENTIAL WIRING METHODS I.**

– 3 hours.

This course is a study of residential wiring practices and methods, the NEC requirements and residential blueprint interpretations. ELT 114 and ELT 115 may be taken in the place of ELT 116.

**ELT 115. RESIDENTIAL WIRING METHODS II.**

– 3 hours.

This course is a study of residential wiring practices and methods, the NEC requirements and residential blueprint interpretations. ELT 114 and ELT 115 may be taken in the place of ELT 116.

**ELT 116. RESIDENTIAL WIRING. – 6 hours.**

This course is a study of residential wiring practices and methods, the NEC requirements and residential blueprint interpretations. ELT 116 may be taken in the place of ELT 114 and ELT 115.

**EMERGENCY MEDICAL SERVICES (EMS)****EMS 100. CARDIOPULMONARY RESUSCITATION I.**

– 1 hour.

This course provides students with concepts as related to areas of basic life support to include coronary artery disease, prudent heart living, symptoms of heart attack, adult one-and – two rescuer CPR, first aid for choking, pediatric basic life support, airway adjuncts, EMS system entry access, automated external defibrillation (AED), and special situations for CPR. Upon course completion, students should be able to identify situations requiring action related to heart or breathing conditions and effectively implement appropriate management for each condition. Students successfully completing this course will receive appropriate documentation of course completion.

**EMS 101. CARDIOPULMONARY RESUSCITATION II.**

– 1 hour.

PREREQUISITE: EMS 100 or program approval.

This course provides students with a review of concepts learned in EMS-100. In addition, the course provides the student with theory and application of airway adjuncts as utilized with airway obstruction and maintenance as well as respiratory and cardiac arrest. Assessment and management of acute ischemic stroke will also be included. Upon course completion, students should be able to identify situations requiring action related to heart or breathing conditions and effectively implement appropriate management for these conditions. Students successfully completing this course will receive appropriate documentation of course completion.

**EMS 103. FIRST AID/CPR. – 1 hour.**

This course provides a study of basic first aid and cardiopulmonary resuscitation (CPR). Students will be able to perform basic first aid and CPR techniques. Upon completion, the student will be eligible for CPR certification testing. *This course does not satisfy the requirements for Nursing, Emergency Medical Services, Medical Assistant, and Allied Health programs.*

**EMS 105. EMERGENCY MEDICAL RESPONDER.**

– 3 hours.

This course provides theory in emergency procedures as contained in the current National Standards Training Curriculum (NSTC) for the First Responder. The course is an introduction to the emergency medical services system and provides fundamentals for students to improve the quality of emergency care provided as the first person to an emergency scene until emergency medical services arrive. Completion of specific student competencies, as outlined in the current NSTC for the First Responder, is required for successful course completion.

**EMS 106. MEDICAL TERMINOLOGY. – 2 hours.**

This course provides students with a survey of words, terms, and descriptions commonly used in health related professions. The course includes spelling, pronunciation, and meaning of prefixes, suffixes, roots, and terms. Students may have the opportunity to utilize computer assisted instruction for learning various medical terms. Upon course completion, students should have the knowledge to associate a variety of medical terms with their meaning and utilize medical terms to effectively communicate with other health professionals.

**EMS 107. EMERGENCY VEHICLE OPERATOR–  
AMBULANCE. – 1 hour.**

PREREQUISITE: Must present a valid driver's license, proof of current automobile liability insurance and program approval.

The Emergency Vehicle Operator Course – Ambulance provides the student with training as contained in the current National Standard Training Curriculum (NSTC) for the Emergency Vehicle Operator Course (EVOC) Ambulance. The course provides the knowledge and skill practice necessary for individuals to learn how to safely operate all types of ambulances. Topics include introduction to the NSTC for ambulance operators; legal aspects of ambulance operation; communication and reporting; roles and responsibilities; ambulance types and operation; ambulance inspection, maintenance, and repair; navigation and route planning; basic maneuvers and normal operating situations; operations in emergency mode and unusual situations, special considerations in safety; and the run. Completion of specific student competencies, utilizing NSTC guidelines, are required for successful completion of this course. NOTE: To qualify for licensure status as an ambulance driver in the State of Alabama, students must

successfully complete this course and meet additional requirements as required by the Alabama Department of Public Health.

**EMS 108. DIRECTED STUDIES IN EMS I. – 1 hour.**

This course offers independent study or computer assisted instruction under faculty supervision and/or theory in an EMS subject relevant to the student's interest and need. Specific cognitive competencies required by the student are defined in writing at the first class period.

**EMS 113. INFECTION CONTROL FOR HEALTH PROFESSIONS. – 1 hour.**

This course is designed for students planning to enter a health related field of study or public service occupations. The course focuses on the sources of communicable diseases and describes methods for prevention of transmission of bloodborne and airborne pathogens. Topics include prevention; universal precautions (body-substance isolation) and asepsis; immunization; exposure control; disposal; labeling; transmission; exposure determination; post-exposure reporting; and an exposure control plan. The course is taught following current guidelines set forth by the Occupational Safety and Health Administration (OSHA). Upon course completion, students should be able to participate in the clinical setting, identify potential sources of bloodborne and airborne pathogens, and use appropriate universal precautions.

**EMS 118. EMERGENCY MEDICAL TECHNICIAN. – 9 hours.**

PREREQUISITE: As required by program.

COREQUISITE: EMS 119—Emergency Medical Technician Clinical.

This course is required to apply for certification as an Emergency Medical Technician. This course provides students with insights into the theory and application of concepts related to the profession of emergency medical services. Specific topics include: EMS preparatory, airway maintenance, patient assessment, management of trauma patients, management of medical patients, treating infants and children, and various EMS operations. This course is based on the NHTS National Emergency Medical Services Education Standards.

**EMS 119. EMERGENCY MEDICAL TECHNICIAN CLINICAL. – 1 hour.**

PREREQUISITE: EMS 106.

This course is required to apply for certification as an EMT. This course provides students with clinical education experiences to enhance knowledge and skills learned in the EMS 118, Emergency Medical Technician Theory and Lab. This course helps students prepare for the National Registry Exam. \*For students who have not yet taken EMS 106, EMS 119 and EMS 106 can be taken during the same semester.

**EMS 120. VEHICLE EXTRICATION. – 2 hours.**

PREREQUISITE: Program approval.

This course provides students with theory in the development of concepts related to the removal of persons from damaged vehicles. Topics include gaining access, stabilization, packaging, patient removal, and basic hazardous situations. Upon course completion, students should be able to effectively extricate a person from a wrecked vehicle.

**EMS 125. HIGH ANGLE RESCUE I. – 2 hours.**

PREREQUISITE: Program approval.

This course provides students with theory in the introduction to high angle rescue techniques. Topics include the high angle environment;

equipment and protection, care and use of rope and related equipment; knots, rappelling, and ascending techniques; and introduction to rescue techniques. Upon course completion, students should have an understanding in the basic techniques of high angle rescue.

**EMS 126. HIGH ANGLE RESCUE II. – 2 hours.**

PREREQUISITE: EMS 125 or program approval.

This course is a continuation and review of EMS 125 and provides students with theory in rescue techniques utilized in rope rescue. Topics include one person rescue techniques, slope evacuation, high angle lowering, hauling systems, high lines, and evacuation operations. Upon course completion, students should have an understanding of how to approach a high angle rescue, utilizing various rigging techniques.

**EMS 155. ADVANCED EMERGENCY MEDICAL TECHNICIAN. – 7 hours.**

PREREQUISITE: EMS 106 and AL EMT License.

COREQUISITES: EMS 156.

This course is required to apply for certification as an Advanced EMT. This course provides students with insights into the theory and application of concepts related to the Advanced EMT level of emergency medical services. Specific topics include: EMS preparatory, airway maintenance, pharmacology, patient assessment, treating trauma patients, various medical procedures, treating infants and children, and various EMS operations. This course is based on the National Emergency Medical Services Education Standards for the Advanced Emergency Medical Technician. \*Students that have not yet completed EMS 106, can taken this with EMS 155 and EMS 156 as a corequisite.

**EMS 156. ADVANCED EMERGENCY MEDICAL TECHNICIAN CLINICAL. – 2 hours.**

PREREQUISITE: AL EMT License.

COREQUISITES: EMS 155.

This course is required to apply for certification as an Advanced EMT. This course provides students with clinical education experiences to enhance knowledge and skills learned in EMS 155, Advanced EMS Theory and Lab. This course helps students prepare for the National Registry Exam.

**EMS 189. APPLIED ANATOMY AND PHYSIOLOGY FOR THE PARAMEDIC. – 4 hours.**

PREREQUISITE: As required by program.

NOTE: EMS 189 or BIO 201 is a prerequisite for the first Paramedic course.

This course introduces human anatomy and physiology and includes concepts related to basic chemistry; fluid, electrolyte, and acid-base balance; functions of cells, tissues, organs, and systems; pathophysiology; and associated medical terminology. Emphasis is placed on applying content to signs, symptoms, and treatments; and situations commonly seen by paramedics. Upon course completion, students should be able to demonstrate a basic understanding of the structure and function of the human body.

**EMS 240. PARAMEDIC OPERATIONS. – 2 hours.**

PREREQUISITE: BIO 201, EMS 106, 189, and current AL EMT license.

COREQUISITES: EMS 241, 242, 244, and 257.

This course focuses on the operational knowledge and skills needed for safe and effective patient care within the paramedic's scope of practice. Content areas include: research, paramedic roles and responsibilities, well-being of the paramedic, illness and injury prevention, medical-legal-ethical issues, therapeutic communications, medical terminology, life span development, ambulance operations, medical incident

command, rescue awareness and operations, hazardous materials incidents, crime scene awareness, and Alabama EMS laws and rules. \*If a student has not yet taken EMS 106, he or she may take it during the same semester as EMS 240.

**EMS 241. PARAMEDIC CARDIOLOGY. – 3 hours.**

PREREQUISITE: BIO 201, EMS 106, 189, and current AL EMT license. COREQUISITES: EMS 240, 242, 244, and 257.

This course introduces the cardiovascular system, cardiovascular electrophysiology, and electrocardiographic monitoring. This course further relates pathophysiology and assessment findings to the formulation of field impressions and implementation of treatment plans for specific cardiovascular conditions. Content areas include: cardiovascular anatomy and physiology, cardiovascular electrophysiology, electrocardiographic monitoring, rhythm analysis, and prehospital 12-lead electrocardiogram monitoring and interpretation, assessment of the cardiovascular patient, pathophysiology of cardiovascular disease and techniques of management including appropriate pharmacologic agents and electrical therapy.

**EMS 242. PARAMEDIC PATIENT ASSESSMENT.**

– 2 hours.

PREREQUISITE: BIO 201, EMS 106, 189, and current Alabama AEMT license.

COREQUISITES: EMS 240, 241, 244, and 257.

This course provides the knowledge and skills needed to perform a comprehensive patient assessment, make initial management decisions, and to communicate assessment findings and patient care verbally and in writing. Content areas include: airway management, history taking, techniques of the physical examination, patient assessment, clinical decision making, communications, documentation and assessment based management.

**EMS 243. PARAMEDIC PHARMACOLOGY. – 1 hour.**

PREREQUISITE: As required by program.

This course introduces basic pharmacological agents and concepts with an emphasis on drug classifications and the knowledge and skills required of a paramedic for safe, effective medication administration. Content areas include: general principles of pharmacology and pharmacologic pathophysiology; venous and intraosseous access techniques, the metric and apothecary system; computation of dosage and solution problems, administration of pharmacologic agents; pharmacokinetics and pharmacodynamics, and nasogastric tube placement.

**EMS 244. PARAMEDIC CLINICAL I. – 1 hour.**

PREREQUISITE: BIO 201, EMS 106, 189, and current AL EMT license. COREQUISITES: EMS 240, 241, 242, and 257.

This course is directed toward the application of knowledge and skills developed in didactic and skills laboratory experiences to the clinical setting. Theory and skills are applied to a variety of patient situations in the clinical setting, with a focus on patient assessment and management, advanced airway management, electro-therapy, I.V./I.O. initiation and medication administration.

**EMS 245. PARAMEDIC MEDICAL EMERGENCIES.**

– 3 hours.

PREREQUISITE: EMS 240, 241, 242, 244, and 257. Current AL EMT license.

COREQUISITES: EMS 246, 247, and 248.

This course relates pathophysiology and assessment findings to the formulation of field impressions and implementation treatment plans

for specific medical conditions. Content areas include: pulmonology, neurology, gastroenterology, renal/urology, toxicology, hematology, environmental conditions, infectious and communicable diseases, abuse and assault, patients with special challenges, and acute interventions for the chronic care patient.

**EMS 246. PARAMEDIC TRAUMA MANAGEMENT.**

– 3 hours.

PREREQUISITE: EMS 240, 241, 242, 244, and 257. Current AL EMT license.

COREQUISITES: EMS 245, 247, and 248.

This course relates pathophysiology and assessment findings to the formulation of field impressions and implementation of treatment plans for trauma patients. Content areas include the pathophysiology, assessment, and management of trauma as related to: trauma systems; mechanisms of injury; hemorrhage and shock; soft tissue injuries; burns; and head, facial, spinal, thoracic, abdominal, and musculoskeletal trauma.

**EMS 247. PARAMEDIC SPECIAL POPULATIONS.**

– 2 hours.

PREREQUISITE: EMS 240, 241, 242, 244, and 257. Current AL EMT license.

COREQUISITES: EMS 245, 246, and 248.

This course relates pathophysiology and assessment findings to the formulation of field impressions and implementation of treatment plans for specific medical conditions. Content areas include: endocrinology, allergies and anaphylaxis, behavioral/psychiatric conditions, gynecology, obstetrics, neonatology, pediatrics, and geriatrics. In the clinical setting, theory and skills are applied to a variety of medical situations across the life span of the patient, with a focus on communication with and management of cardiac, acute care, psychiatric/behavioral, obstetrical, newborn, pediatric, geriatric, and acute interventions for chronic care patients, and patients with special challenges.

**EMS 248. PARAMEDIC CLINICAL II. – 3 hours.**

PREREQUISITE: EMS 240, 241, 242, 244, and 257. Current AL EMT license.

COREREQUISITES: EMS 245, 246, and 247.

This course is required to apply for certification as a Paramedic. This course provides students with clinical education experiences to enhance knowledge and skills learned in EMS 245, 246, and 247 and knowledge and proficiency from previous clinical experiences. This course helps prepare students for the National Registry Paramedic Exam. The student will have the opportunity to use the basic and advanced skills of the Paramedic in the clinical setting under the direct supervision of licensed healthcare professionals. Requires licensure at the AEMT level.

**EMS 253. PARAMEDIC TRANSITION TO THE WORKFORCE. – 2 hours.**

PREREQUISITE: EMS 245, 246, 247, and 248. Current AL EMT license. EMS 189 or BIO 201 & 202

COREREQUISITES: EMS 254, 255, and 256

This course is designed to meet additional state and local educational requirements for paramedic practice. Content includes: ACLS, PALS or PEPP, ITLS or PHTLS, prehospital protocols, transfer drugs, and other courses as dictated by local needs or state requirements.

**EMS 254. ADVANCED COMPETENCIES FOR  
PARAMEDIC. – 2 hours.**

PREREQUISITE: EMS 245, 246, 247, and 248. Current AL EMT license. EMS 189 or BIO 201 and 202

COREQUISITES: EMS 253, 255, and 256.

This course is designed to assist students in preparation for the paramedic licensure examination. Emphasis is placed on validation of knowledge and skills through didactic review, skills lab performance, and/or computer simulation and practice testing. Upon course completion, students should be sufficiently prepared to sit for the paramedic licensure examination.

**EMS 255. PARAMEDIC FIELD PRECEPTORSHIP.  
– 5 hours.**

PREREQUISITE: EMS 245, 246, 247, and 248. Current AL EMT license. EMS 189 or BIO 201 and 202

COREREQUISITES: EMS 253, 254, and 256.

This course is required to apply for certification as a paramedic. This course provides students with field experiences to enhance knowledge and skills learned throughout the paramedic program. This course helps prepare students for the National Registry Paramedic Exam. Students will utilize paramedic skills in a field setting under the direct supervision of a licensed paramedic. Requires licensure at the EMT level and completion of EMS 240, 241, 242, 243, 244, 245, 246, 247, and 248.

**EMS 256. PARAMEDIC TEAM LEADERSHIP. – 1 hour.**

PREREQUISITE: EMS 245, 246, 247, and 248. Current AL EMT license. EMS 189 or BIO 201 and 202

COREREQUISITES: EMS 253, 254, and 255.

This course is designed to evaluate students' ability to integrate didactic, psychomotor skills, clinical, and field internship instruction to serve as a competent entry-level paramedic. This final evaluative (rather than instructional) course focuses on students' professional attributes and integrative competence in clinical decision-making and team leadership in the prehospital setting. Upon course completion, students should have demonstrated adequate knowledge and skills, professional attitudes and attributes, clinical decision-making and team leadership abilities to effectively function as a competent entry-level paramedic.

**EMS 257. PARAMEDIC APPLIED PHARMACOLOGY.  
– 2 hour.**

PREREQUISITE: BIO 201, EMS 106, 189, and Current AL EMT license.

This course introduces basic and advanced pharmacological agents and concepts, with an emphasis on drug classifications and the knowledge and skills required for safe, effective medication administration. Medication pharmacokinetics and pharmacodynamics will be evaluated for most medicines used in the pre-hospital settings. Students will also learn how to establish various routes of medication administration and procedures for administering medications via these routes. Students will also demonstrate mathematic computations for various drug and solution dose administration problems.

**EMS 266. ADVANCED CV LIFE SUPPORT PROVIDER.  
– 1 hour.**

PREREQUISITE: EMS 245, 246, 247, and 248. Current AL EMT license.

The Advanced Cardiovascular Life Support Provider Course provides students with concepts related to advanced cardiovascular life support. Content areas include acute myocardial infarction, stroke, cardiovascular pharmacology, electrophysiology, various

rhythm disturbances, and techniques of management of cardiovascular emergencies. The course is taught in accordance with national standards and requires specific student competencies. Students successfully completing this course will receive appropriate documentation of course completion.

**EMS 269. PEDIATRIC MEDICAL LIFE SUPPORT.  
– 1 hour.**

PREREQUISITE: EMS 245, 246, 247, and 248. Current AL EMT license.

This course provides students with theory and simulated case studies in pediatric care. Content areas include recognition of pediatric pre-arrest conditions; shock; basic life support; oxygenation and airway control; newborn resuscitation; essentials in pediatric resuscitation; dysrhythmia recognition and management; vascular access; and use of medications. This course is taught in accordance with national standards and requires specific student competencies. Students successfully completing this course will receive appropriate documentation of course completion.

**ENGINEERING (EGR)**

**EGR 101. ENGINEERING FOUNDATIONS. – 3 hours. C**

This course introduces students to engineering as a profession, basic engineering skills, and the design process. The course includes components to develop teaming and oral and written communication skills. The course also provides an introduction to computer tools used by engineers (e.g., spreadsheet, word processing, presentation software, Internet). *Note: Students transferring to a four-year institution will need to take MTH 113.*

**ENGINEERING TECHNOLOGY (ENT)**

**ENT 106. PRINCIPLES OF ENGINEERING  
TECHNOLOGY. – 3 hours.**

PREREQUISITE: EGR 101.

This course provides students with principles of Engineering Technology. Topics include fluid power, control systems, materials, manufacturing processes, statics, kinematics, and statistics. Upon completion of this course, the student will possess a clear understanding of basic engineering technology principles.

**ENT 140. APPLIED STATICS. – 3 hours.**

This course is concerned with the analysis of loads (force and torque, or "moment") on physical systems in static equilibrium. Upon completion of this course, the student should be able to identify forces, make free body diagrams, and calculate moments of inertia as well as stress and strain in a static system.

**ENT 220. PROCESS TECHNOLOGY SYSTEMS.  
– 3 hours.**

This course is a study of the interrelations of process equipment and process systems. Students will be able to arrange process equipment into systems; describe the purpose and function of specific process systems, explain how factors affecting process systems are controlled under normal conditions, and recognize abnormal process conditions. Students are also introduced to the concept of system process control manufacturing plant process economics.

**ENT 221. INDUSTRIAL QUALITY AND PRODUCTIVITY. – 3 hours.**

This course provides an overview of various quality and productivity management methods and their application to the workplace. Included is a discussion of the history of TQM, problem solving tools, Lean Manufacturing, Six Sigma, and ISO 9000.

**ENT 222. INTRODUCTION TO PROJECT MANAGEMENT. – 3 hours.**

This course is an introduction to project management tools and techniques used to schedule and track a major project. Critical Path Method of scheduling will be used in Gantt chart scheduling. Students will learn techniques of scheduling, communication, assigning resources, and tracking progress. The latest scheduling software will be used to enable them to implement successful project management.

**ENT 223. MATERIALS SELECTION. – 3 hours.**

This course provides theory in the evaluation and selection of materials for the Engineering Technician. Topics include mechanical properties, strength properties, thermal properties, electrical properties, chemical compatibility, and criteria for selection and evaluation of various materials. Upon completion of this class the student will be able to select appropriate materials for various applications.

**ENT 240. APPLIED STRENGTH OF MATERIALS. – 3 hours.**

This course teaches methods of calculating stresses in structural members, such as beams, columns and shafts. Upon completion of this course, the student should be able to design shafts, beams, and columns for simple force systems.

**ENT 242. ADVANCED STUDIES IN ENGINEERING TECHNOLOGY. – 3 hours.**

This course allows students to study topics in depth and apply skills and knowledge to practical situations relevant to engineering technology.

**ENT 243. COOPERATIVE EDUCATION. – 3 hours.**

PREREQUISITE: As required by program.

This course provides students work experience with a college-approved employer in an area directly related to the student's program of study. Emphasis is placed on integrating classroom experiences with work experience. Upon completion, students should be able to evaluate career selection, demonstrate employability skills, and satisfactorily perform work-related competencies.

**ENGLISH (ENG)****ENG 080. ENGLISH LABORATORY. – 1 hour.**

This course, which may be repeated as needed, provides students with a laboratory environment where they can receive help from qualified instructors on English assignments at the developmental level. Emphasis is placed on one-to-one guidance to supplement instruction in English courses. A student's success in this course is measured by success in those other English courses in which the student is enrolled.

**ENG 092. BASIC ENGLISH I. – 3 hours.**

This course is a review of basic writing skills and basic grammar. Emphasis is placed on the composing process of sentences and paragraphs in standard American written English. Students will demonstrate these skills chiefly through the writing of well-developed,

multi-sentence paragraphs. To complete ENG 092 and be permitted to take ENG 093, students must finish the course with a minimum grade of "C," or 70%, and retake the ACCUPLACER exam and make a minimum score of 3.

**ENG 093. BASIC ENGLISH II. – 3 hours.**

PREREQUISITE: For those taking English 092, a grade of "C" in ENG 092 and appropriate placement score is required. For those not required to take English 092, a minimum score of 4 on the ACCUPLACER exam is required.

This course is a review of composition skills and grammar. Emphasis is placed on coherence and the use of a variety of sentence structures in the composing process and on standard American written English usage. Students will demonstrate these skills chiefly through the writing of paragraph blocks and short essays. To complete English 093 and be permitted to take English 101, students must be able to write a satisfactory essay panel-graded by English faculty and must finish the course with a grade of "C," or 70%.

**ENG 101. ENGLISH COMPOSITION I. – 3 hours. A**

PREREQUISITE: Successful completion of ENG 093 or appropriate placement score.

English Composition I provides instruction and practice in the writing of at least six (6) extended compositions and the development of analytical and critical reading skills and basic reference and documentation skills in the composition process. English Composition I may include instruction and practice in library usage.

**ENG 102. ENGLISH COMPOSITION II. – 3 hours. A**

PREREQUISITE: A grade of "C" or better in ENG 101 or the equivalent.

English Composition II provides instruction and practice in the writing of six (6) formal, analytical essays, at least one of which is a research project using outside sources and/or references effectively and legally. Additionally, English Composition II provides instruction in the development of analytical and critical reading skills in the composition process. English Composition II may include instruction and practice in library usage.

**ENG 246. CREATIVE WRITING I. – 3 hours. C**

PREREQUISITE: ENG 102 or permission of the instructor.

This course provides instruction and practice in the writing of critical analysis of imaginative forms of literature. Emphasis is placed on originality in the creative writing process, and this course may include instruction on publishing. Students will compose a significant body of imaginative literature, which may be read by or to the class.

**ENG 247. CREATIVE WRITING II. – 3 hours. C**

PREREQUISITE: ENG 246 or permission of the instructor.

A continuation of ENG 246, this course provides instruction and practice in the writing and critiquing of imaginative forms of literature. Emphasis is placed on originality in the creative writing process, and this course may include instruction on publishing. Students will compose a significant body of imaginative literature, which may be read by or to the class.

**ENG 251. AMERICAN LITERATURE I. – 3 hours. A**

PREREQUISITE: ENG 102 or equivalent.

This course is a survey of American literature from its inception to the middle of the nineteenth century. Emphasis is placed on representative works and writers of this period and on the literary, cultural, historical, and philosophical forces that shaped these works and that are reflected in them. Upon completion and in written compositions, students will

be able to interpret the aesthetic and thematic aspects of these works, relate the works to their historical and literary contexts, and understand relevant criticism and research.

**ENG 252. AMERICAN LITERATURE II. – 3 hours. A**

PREREQUISITE: ENG 102 or equivalent.

This course is a survey of American literature from the middle of the nineteenth century to the present. Emphasis is placed on representative works and writers of this period and on the literary, cultural, historical, and philosophical forces that shaped these works and that are reflected in them. Upon completion and in written compositions, students will be able to interpret the aesthetic and thematic aspects of these works, relate the works to their historical and literary contexts, and understand relevant criticism and research.

**ENG 261. ENGLISH LITERATURE I. – 3 hours. A**

PREREQUISITE: ENG 102 or equivalent.

This course is a survey of English literature from the Anglo-Saxon period to the Romantic Age. Emphasis is placed on representative works and writers of this period and on the literary, cultural, historical, and philosophical forces that shaped these works and that are reflected in them. Upon completion and in written compositions, students will be able to interpret the aesthetic and thematic aspects of these works, relate the works to their historical and literary contexts, and understand relevant criticism and research.

**ENG 262. ENGLISH LITERATURE II. – 3 hours. A**

PREREQUISITE: ENG 102 or equivalent.

This course is a survey of English literature from the Romantic Age to the present. Emphasis is placed on representative works and writers of this period and on the literary, cultural, historical, and philosophical forces that shaped these works and that are reflected in them. Upon completion and in written compositions, students will be able to interpret the aesthetic and thematic aspects of these works, relate the works to their historical and literary contexts, and understand relevant criticism and research.

**ENG 271. WORLD LITERATURE I. – 3 hours. A**

PREREQUISITE: ENG 102 or equivalent.

This course is a study of selected literary masterpieces from Homer to the Renaissance. Emphasis is placed on major representative works and writers of this period and on the literary, cultural, historical, and philosophical forces that shaped these works and that are reflected in them. Upon completion and in written compositions, students will be able to interpret the aesthetic and thematic aspects of these works, relate the works to their historical and literary contexts, and understand relevant criticism and research.

**ENG 272. WORLD LITERATURE II. – 3 hours. A**

PREREQUISITE: ENG 102 or equivalent.

This course is a study of selected literary masterpieces from the Renaissance to the present. Emphasis is placed on major representative works and writers of this period and on the literary, cultural, historical, and philosophical forces that shaped these works and that are reflected in them. Upon completion and in written compositions, students will be able to interpret the aesthetic and thematic aspects of these works, relate the works to their historical and literary contexts, and understand relevant criticism and research.

**ENG 298. SPECIAL TOPICS IN LANGUAGE AND LITERATURE. – 1-2 hours. C**

PREREQUISITE: Permission of the instructor.

This course, which may be repeated for credit so long as the topics differ, permits a student to study with an instructor a topic in English language or in literature. Emphasis is placed on a narrowly focused topic in which the instructor has special expertise, knowledge, or interest. Students will demonstrate through a research paper and/or a literary critique an understanding of the topic.

**ENG 299. DIRECTED STUDIES IN LANGUAGE AND LITERATURE. – 1-3 hours. C**

PREREQUISITE: Permission of the instructor.

This course, which may be repeated for credit so long as the topics differ, provides the student the opportunity to study an English language or literary topic chosen by the student in consultation with the instructor. Emphasis is placed on the student's investigating the topic and reporting the results of the investigation. The student will demonstrate knowledge of the topic through either a written or an oral presentation.

## GEOGRAPHY (GEO)

**GEO 100. WORLD REGIONAL GEOGRAPHY.**

– 3 hours. A

This course surveys various countries and major regions of the world with respect to location and landscape, world importance, political status, population, type of economy, and its external and internal organization problems and potentials.

## HEALTH EDUCATION (HED)

**HED 224. PERSONAL AND COMMUNITY HEALTH.**

– 3 hours. B

This course covers health problems for the individual and for the community. Areas of study include mental health, family life, physical health, chronic and degenerative diseases, control of communicable diseases, and the understanding of depressants and stimulants. Healthful living habits will be emphasized.

**HED 226. WELLNESS. – 1-3 hours. C**

PREREQUISITE: As required by program.

This course provides health-related education to those individuals seeking advancement in the area of personal wellness. The course has five major components: (1) fitness and health assessment, (2) physical work capacity, (3) education, (4) reassessment and (5) retesting.

**HED 230. SAFETY AND FIRST AID. – 3 hours. B**

HED 230 is divided into two parts. The first part concerns itself with the development of a safety education program within an organization (i.e., school, office, shop, etc.). The second part deals with physical injuries, emergency care, and treatment of those injuries. CPR certification and Standard Red Cross Cards are given upon successful completion of American Red Cross requirements.

## HEALTH INFORMATION TECHNOLOGY (HIT)

### HIT 116. PHARMACOLOGY FOR HIT. – 2 hours.

PREREQUISITE: As required by college.

This course is a study of drug classifications. The course focuses on generic and name brand drugs and their use. At the conclusion of the course, the student should be able to apply knowledge regarding certain drugs and their usage in treatment and prevention of disease.

### HIT 230. MEDICAL CODING SYSTEMS I. – 3 hours.

PREREQUISITE: As required by college.

This course is intended to develop an understanding of coding and classification systems in order to assign valid medical codes. Instruction includes description of classification and nomenclature systems; coding diagnoses and/or procedures; sequencing codes; analyzing actual medical records to identify data elements to be coded; and validating coded clinical information. Student competency includes demonstration of coding principles and applications (manual and/or computer assisted). CORE

### HIT 232. MEDICAL CODING SYSTEMS II. – 3 hours.

PREREQUISITE: As required by college.

This course is a continuation of Medical Coding Systems I which is intended to develop an understanding of coding and classification systems in order to assign valid medical codes. Instruction includes coding diagnoses and/or procedures; sequencing codes; analyzing actual medical records to identify data elements to be coded; validating coded clinical information. Student competency includes demonstration of coding principles and applications (manual and/or computer assisted). CORE

### HIT 283. MEDICAL CODING PROFESSIONAL PRACTICE. – 2 hours.

PREREQUISITE: As required by college.

This course provides experience in medical coding of actual charts. The course allows the student to demonstrate basic competencies acquired in previous medical coding course work with on-site, online, and/or on-campus simulations and learning experiences. Student competency includes demonstrated medical coding proficiency.

## HISTORY (HIS)

### HIS 101. WESTERN CIVILIZATION I. – 3 hours. A

This course is a survey of social, intellectual, economic, and political developments which have molded the modern Western world. This course covers the ancient and medieval periods and concludes in the era of the Renaissance and Reformation.

### HIS 102. WESTERN CIVILIZATION II. – 3 hours. A

This course is a continuation of HIS 101; it surveys development of the modern Western world from the era of Renaissance and Reformation to the present.

### HIS 201. UNITED STATES HISTORY I. – 3 hours. A

This course surveys United States history during colonial, Revolutionary, early national and antebellum periods. It concludes with the Civil War and Reconstruction.

### HIS 202. UNITED STATES HISTORY II. – 3 hours. A

This course is a continuation of HIS 201; it surveys United States history from the Reconstruction era to the present.

## HOME ECONOMICS (HEC)

### HEC 140. PRINCIPLES OF NUTRITION. – 3 hours. B

This course introduces students to the principles of nutrition and the role and functions of nutrients in man's food. Basic information concerning food selection and nutrition as a factor in health, ecology, and economy is included. Implications of nutrition for children may be stressed.

## HUMANITIES (HUM)

### HUM 298. DIRECTED STUDIES IN HUMANITIES.

– 1-3 hours. C

This course provides an opportunity for the student to study selected topics in the area of the humanities under the supervision of a qualified instructor. The specific topics will be determined by the interests of the students and faculty and the course may be repeated for credit.

## INDUSTRIAL ELECTRONICS TECHNOLOGY (ILT)

### ILT 100. APPLIED ELECTRONIC COMPUTATION.

– 3 hours.

This course is an applied mathematics and algebra course for students in electronics or similar programs. Topics include decimals, fractions, negative numbers, powers and roots, the metric systems, logarithms, applied trigonometry and algebra. Upon completion of this course, a student will be able to perform applied mathematics calculations needed in electronics.

### ILT 101. SURVEY OF ELECTRONICS. – 3 hours.

This course in a non-technical way, describes the history and applications of electronics in the modern world. Topics include: fundamental concepts of electronics theory, devices, digital and analog circuits, microprocessors, and modern test equipment. Upon completion of this course, a student should be able to describe basic laws and circuit behavior for analog and digital circuits.

### ILT 108. INTRODUCTION TO INSTRUMENTATION AND PROCESS CONTROL. – 3 hours.

PREREQUISITE: ILT 197

This course is an introductory study of the control devices and methods used in industry for the control and transmission of information pertaining to process variables. This study includes an introduction to instrumentation and control mathematics. This course also provides instruction in the fundamental concepts of pressure, level, flow, temperature, and analyticals.

### ILT 109. ELECTRICAL BLUEPRINT READING.

– 3+0=3 hours.

This course will enable the student to obtain a working knowledge of the elements of blueprint reading; the ability to interpret electrical, mechanical, and architectural drawing; and the ability to visualize the entire building structure in relationship to the electrical system.

**ILT 115. ADVANCED INDUSTRIAL CONTROLS.****– 3 hours.**

This course emphasizes the fundamentals and applications of solid state motor starters. Topics include DC drives, AC variable frequency drives, thyristors, sequence circuits and closed loop control including PID process control. Upon completion, students should be able to apply principles of solid state motor starters.

**ILT 116. ADVANCED INDUSTRIAL CONTROLS LAB.****– 2 hours.**

COREQUISITE: ILT 115.

This lab emphasizes DC drives, AC variable frequency drives, thyristors, sequence circuits and closed loop control including PID process control. Upon completion, students should be able to apply principles of solid state motor starters.

**ILT 117. PRINCIPLES OF CONSTRUCTION WIRING.****– 1+2=3 hours.**

This course provides a study of the technical skills required to safely perform electrical wiring installations. Topics include methods of wiring residential, commercial, and industrial locations. Upon completion, students should be able to apply safe wiring skills to residential, commercial and industrial applications.

**ILT 118. CONSTRUCTION WIRING NEC. – 1+2=3 hours.**

This course provides a study of the codes that is required to safely perform electrical wiring installations. Emphasis will be placed upon the codes that apply to residential, commercial, and industrial locations. Upon completion, students should be able to apply the codes in the electrical wiring of residential, commercial and industrial applications.

**ILT 160. DC FUNDAMENTALS. – 3 hours.**

COREQUISITE: ILT 161

This course provides a study of atomic theory, direct current (DC), properties of conductors and insulators, direct current characteristics of series, parallel, and series parallel circuits. Inductors and capacitors are introduced and their effects on DC circuits are examined. Students are prepared to analyze complex DC circuits, solve for unknown circuits variables and to use basic electronic test equipment. This course also provides hands on laboratory exercises to analyze, construct, test, and troubleshoot direct current circuits. Emphasis is placed on the use of scientific calculator and the operation of common test equipment used to analyze and troubleshoot DC and to prove the theories taught during classroom instruction.

**ILT 161. AC FUNDAMENTALS. – 3 hours.**

COREQUISITE: ILT 160

This course provides a study of the theory of alternating current (AC). Students are prepared to analyze complex AC circuit configurations with resistor, capacitors, and inductors in series and parallel combinations. Upon completion, students should be able to describe AC circuits and explain the function of AC such as RLC, impedance, phase relationships, and power factor. This course also provides hands on laboratory exercises to analyze alternating current using a variety of circuit configurations with resistors, capacitors, and inductors in series and parallel combinations. Emphasis is placed on the operation of common test equipment used to analyze and troubleshoot AC circuits to prove the theories taught.

**ILT 162. SOLID STATE FUNDAMENTALS. – 3 hours.**

PREREQUISITE: ILT 160 &amp; ILT 161

This course provides instruction in basic solid state theory beginning with atomic structure and including devices such as diodes, bipolar transistors, field effect transistors, amplifiers, thyristors, operational amplifiers, oscillator and power supply circuits. Emphasis is placed on the practical application of solid-state devices, proper biasing and amplifier circuit analysis and the use of test equipment to diagnose, troubleshoot and repair typical solid-state device circuits. This course also provides the opportunity for students to apply the solid-state principles and theories learned in class in the laboratory setting. Emphasis is placed on the practical application of solid-state devices, proper biasing and amplifier circuit analysis and the use of test equipment to diagnose, troubleshoot and repair typical solid-state.

**ILT 163. DIGITAL FUNDAMENTALS. – 3 hours.**

PREREQUISITE: ILT 160 &amp; ILT 161

This course provides instruction on basic logic gates, flip-flops, registers, counters, microprocessor/computer fundamentals, analog to digital conversion, and digital analog conversion. Emphasis is placed on number systems, Boolean algebra, combination logic circuits, sequential logic circuits and typical microprocessor data manipulation and storage. This course also has an embedded lab with exercises designed to develop skills required by industry. Upon completion, students should be able to analyze digital circuits, draw timing diagrams, determine output of combinational and sequential logic circuits, and diagnose and troubleshoot electronic components, as well as demonstrate knowledge of microprocessor and computer circuits.

**ILT 164. CIRCUIT FABRICATION I. – 1 credit hour.**

This course provides instruction in fabrication of functional circuits and is an introduction to device construction and fabrication. Utilizing discrete components, students will fabricate functional circuits. Topics include soldering, cable construction, coaxial cable connection and termination, component mounting, cases, and chassis, printed circuit board design, layout, fabrication, and repair, as well as soldering techniques, care of tools, wire splicing, wire wrapping, connector maintenance, and related shop safety. Upon completion of this course, students should be able to perform basic circuit and project construction.

**ILT 166. MOTORS AND TRANSFORMERS I. – 3 hours.**

PREREQUISITE: ILT 160 &amp; ILT 161

This course covers motor operation, motor types, motor components, motor feeder and branch circuits. Topics include motor protection and motor control circuits. The laboratory enables students to test motors, transformer types, and testing of input and output voltage. Upon completion, students should be able to test motors, transformer types, and testing for input and output voltage.

**ILT 180. SPECIAL TOPICS. – 3 hours.**

This course is designed to allow students an opportunity to study topics of particular interest which require the application of technical knowledge and technical skills. Emphasis is placed on the application of skills and knowledge with practical experiences. Upon completion, students should be able to solve job related problems using technical skills and knowledge.

**ILT 181. SPECIAL TOPICS IN ILT. – 1+2=3 hours.**

This course provides a guided independent study of special topics in ILT. The student and instructor designs the plan of study. Upon



completion, students should be able to demonstrate skills developed in these courses.

**ILT 192. CO-OP IN ILT. – 1-3 hours.**

These courses provide students with relevant work experience in business/industry. Emphasis is placed on production in a work setting. Upon completion, students should be able to identify job responsibilities and to demonstrate skills necessary for entry level employment.

**ILT 194. INTRODUCTION TO PROGRAMMABLE LOGIC CONTROLLERS. – 3 hours.**

PREREQUISITE: ILT 197

This course focuses on the use of PLCs. Topics include operations, programming procedures, fault isolation procedures, and methods of entering, executing, debugging, and changing programs. The laboratory enables students to practice operations, programming procedures, fault isolation procedures, and methods of entering, executing, debugging, and changing programs. Upon completion, students should be able to apply principles of operations and programming of programmable logic controllers.

**ILT 195. TROUBLESHOOTING TECHNIQUES I. – 3 hours.**

PREREQUISITE: ILT 197

This course focuses on the systematic approach to solving problems. The laboratory portion emphasizes instrument failures and their interaction with process down-time. Upon completion, students should be able to solve problems on a process simulator or in an actual setting.

**ILT 197. MOTOR CONTROLS I. – 3 hours.**

PREREQUISITE: ILT 160 & ILT 161

This course covers the use of motor control symbols, magnetic motor starters, running overload protection, push-button stations, sizing of magnetic motor starters and overload protection, and complex ladder diagrams of motor control circuits. Topics include sizing magnetic starters and overload protection, the use of push-button stations, ladder diagrams, and magnetic motor starters in control of electric motors, wye-delta starting, part start winding, resistor starting and electric starting devices. Upon completion, students should be able to understand the operation of motor starters, overload protection, interpret ladder diagrams using push-button stations and understand complex motor control diagrams. This is a CORE course for ELT.

**ILT 202. INDUSTRIAL ELECTRONICS LAB. – 2 hours.**

COREQUISITE: ILT 201.

This course demonstrates the concepts, devices, and applications of electronics in industrial processes. Upon completion of this course, students should be able to construct, evaluate, and calibrate basic industrial sensing and control circuits.

**ILT 216. INDUSTRIAL ROBOTICS. – 3+0=3 hours.**

COREQUISITE: ILT 217

This course covers principles of electro-mechanical devices. Topics include the principles, concepts, and techniques involved in interfacing microcomputers to various electro-mechanical devices to produce geographical movement. Upon completion, students should be able to apply the principles of electro-mechanical devices.

**ILT 217. INDUSTRIAL ROBOTICS LAB. – 0+2=2 hours.**

COREQUISITE: ILT 216.

This lab covers the principles, concepts, and techniques involved in interfacing microcomputers to various electromechanical devices to produce geographical movement. Upon completion students should be able to apply the principles of electro-mechanical devices.

**ILT 231. NATIONAL ELECTRIC CODE. – 3 hours.**

This course introduces students to the National Electric Code. Emphasis is placed on locating and interpreting needed information within the NEC manual. Upon completion of this course, the student should be able to locate code requirements for a specific electrical installation.

**ILT 235. PRINCIPLES OF ROBOTIC SYSTEMS. – 3 hours.**

PREREQUISITE: As required by program.

This course is an overview of basic robotic systems and classifications used in industry. An emphasis is placed on safety elements particular to automation. Topics include the principles and concepts associated with robotic system components. Upon completing this course, students should be able to classify robots and explain the various components of a safe robotic system and how these components interact.

**ILT 276. ELEMENTS OF INDUSTRIAL CONTROL II. – 3 hours.**

CO-REQUISITE: ILT 277; PREREQUISITE: ILT 194

This course includes the advanced principals of PLC's including hardware, programming, variable speed drives, and troubleshooting. Emphasis is placed on developing advanced working programs, and troubleshooting hardware and software communication problems. Upon completion, students should be able to demonstrate their ability in developing programs and troubleshooting the system.

**ILT 277. ELEMENTS OF INDUSTRIAL CONTROL II LAB. – 2 hours.**

CO-REQUISITE: ILT 276; PREREQUISITE: ILT 194

This course includes the advanced principals of PLC's including hardware, programming, variable speed drives, and troubleshooting. Emphasis is placed on developing advanced working programs, and troubleshooting hardware and software communication problems. Upon completion, students should be able to demonstrate their ability in developing programs and troubleshooting the system.

**ILT 280. SPECIAL TOPICS. – 0+3=3 hours.**

This course is designed to allow students an opportunity to study directly-related topics of particular interest which require the application of technical knowledge and technical skills. Emphasis is placed on the application of skills and knowledge with practical experiences. Upon completion, students should be able to solve job related problems using technical skills and knowledge.

**ILT 291. COOPERATIVE EDUCATION. – 0+3=3 hours.**

This course provides students work experience with a college-approved employer in an area directly related to the student's program of study. Emphasis is placed on integrating classroom experiences with work experience. Upon completion, students should be able to evaluate career selection, demonstrate employability skills, and satisfactorily perform work-related competencies.

**ILT 293. COOPERATIVE EDUCATION. – 0+3=3 hours.**

This course provides students work experience with a college-approved employer in an area directly related to the student's program of study. Emphasis is placed on integrating classroom experiences with work experience. Upon completion, students should be able to evaluate career selection, demonstrate employability skills, and satisfactorily perform work-related competencies.

## **INDUSTRIAL MAINTENANCE TECHNOLOGY (INT)**

**INT 105. INTRODUCTION TO PROCESS TECHNOLOGY. – 3 hours.**

This course is designed to provide students with an introduction to process control technology and various instruments used to control processes. Upon completion, students should be able to comprehend principles of process control technology and the various instruments used to control processes in an industrial setting.

**INT 107. FUNDAMENTALS OF ELECTRICITY I. – 3 hours.**

This course provides students with knowledge of fundamentals of electricity commonly associated with an industrial setting. It is a foundational course to enable multicraft industrial maintenance personnel to apply knowledge and skill of electricity in a workplace.

**INT 108. FUNDAMENTALS OF ELECTRICITY II. – 3 hours.**

This course provides students with knowledge of fundamentals of electricity commonly associated with an industrial setting. It is a foundational course to enable multicraft industrial maintenance personnel to apply knowledge and skill of electricity in a workplace.

**INT 112. INDUSTRIAL MAINTENANCE SAFETY PROCEDURES. – 3 hours.**

This course is an in-depth study of the health and safety practices required for maintenance of industrial production equipment. Topics include traffic, ladder, electrical, and fire safety, safe work in confined spaces, electrical and mechanical lock-out procedures, emergency procedures, OSHA regulations, MSDS Right-to-Know law, hazardous materials safety, and safety equipment use and care. Upon course completion, students will be able to implement health and safety practices in an industrial production setting.

**INT 117. PRINCIPLES OF INDUSTRIAL MECHANICS. – 3 hours.**

PREREQUISITES: As required by college.

This course provides instruction in basic physics concepts applicable to mechanics of industrial production equipment. Topics include the basic application of mechanical principles with emphasis on power transmission, specific mechanical components, alignment, and tension. Upon completion, students will be able to perform basic troubleshooting, repair and maintenance functions on industrial production equipment. This is a CORE course.

**INT 118. FUNDAMENTALS OF INDUSTRIAL HYDRAULICS AND PNEUMATICS. – 3 hours**

This course includes the fundamental concepts and theories for the safe operation of hydraulic and pneumatic systems used with industrial production equipment. Topics include the physical concepts, theories,

laws, air flow characteristics, actuators, valves, accumulators, symbols, circuitry, filters, servicing safety, and preventive maintenance and the application of these concepts to perform work. Upon completion, students should be able to service and perform preventive maintenance functions on hydraulic and pneumatic systems. This is a CORE course.

**INT 119. PRINCIPLES OF MECHANICAL MEASUREMENT AND TECHNICAL DRAWING. – 3 hours.**

This course provides instruction in the use of precision measuring tools and the interpretation of technical drawings. Topics include the use of calipers, micrometers, steel rules, dial indicators, identifying types of lines and symbols of technical drawings, recognition and interpretation of various types of views, tolerances, and dimensions. Upon course completion, students will be able to use precision measuring tools and interpret technical drawings.

**INT 126. PREVENTIVE MAINTENANCE. – 3 hours.**

PREREQUISITES: As required by college.

This course focuses on the concepts and applications of preventive maintenance. Topics include the introduction of alignment equipment, job safety, tool safety, preventive maintenance concepts, procedures, tasks, and predictive maintenance concepts. Upon course completion, students will demonstrate the ability to apply proper preventive maintenance and explain predictive maintenance concepts. This is a CORE course.

**INT 127. PRINCIPLES OF INDUSTRIAL PUMPS AND PIPING SYSTEMS. – 3 hours.**

This course provides instruction in the fundamental concepts of industrial pumps and piping systems. Topics include pump identification, operation, and installation, maintenance and troubleshooting, and piping systems, and their installation. Upon course completion, students will be able to install, maintain, and troubleshoot industrial pumps and piping systems.

**INT 129. INDUSTRIAL SAFETY AND MAINTENANCE TECHNIQUES. – 3 hours.**

PREREQUISITES: As required by college.

This course provides instruction in basic maintenance techniques and safety. Topics include drawing, sketching, basic hand tools, portable power tools, stationary power tools, measurement, screw threads, mechanical fasteners, machinery and equipment installation, rigging, and their proper safe operations.

**INT 134. PRINCIPLES OF INDUSTRIAL MAINTENANCE WELDING AND METAL CUTTING TECHNIQUES. – 3 hours.**

This course provides instruction in the fundamentals of acetylene cutting and the basics of welding needed for the maintenance and repair of industrial production equipment. Topics include oxy-fuel safety, choice of cutting equipment, proper cutting angles, equipment setup, cutting plate and pipe, hand tools, types of metal welding machines, rod and welding joints, and common welding passes and beads. Upon course completion, students will demonstrate the ability to perform metal welding and cutting techniques necessary for repairing and maintaining industrial equipment.

**INT 153. PRECISION MACHINING  
FUNDAMENTALS I. – 3 hours.**

This course focuses on metal cutting machines used to make parts and tools. Topics include lathes, mills, drills, and presses. Upon course completion, students will have the ability to use precision measurement instruments and to read mechanical drawings.

**INT 158. INDUSTRIAL WIRING I. – 3 hours.**

This course focuses on principles and applications of commercial and industrial wiring. Topics include, electrical safety practices, an overview of National Electric Code requirements as applied to commercial and industrial wiring, conduit bending, circuit design, pulling cables, transformers, switch gear, and generation principles.

**INT 192. INDUSTRIAL MAINTENANCE  
TECHNOLOGY CO-OP. – 3 hours.**

PREREQUISITE: Permission of instructor.

In this series of courses, students work on a part-time basis in a job directly related to Industrial Maintenance Technology. The employer evaluates the student's performance and the student submits a descriptive report of his or her work experiences. Upon completion, the student will demonstrate skills learned in an employment setting.

**INT 212. INDUSTRIAL MOTOR CONTROLS I.  
– 3 hours.**

This course focuses on information regarding industrial motor controls and basic information regarding process logic controllers. Upon completion students will be able to remove, replace, and wire different types of control devices for operating industrial motors.

**INT 220. SPECIAL TOPICS. – 3 hours.**

This course is designed to allow students an opportunity to study directly-related topics of particular interest which require the application of technical knowledge and technical skills. Emphasis is placed on the application of skills and knowledge with practical experiences. Upon completion, students should be able to solve job related problems using technical skills and knowledge.

**INT 251. INTRODUCTION TO PROGRAMMABLE  
LOGIC CONTROL. – 3 hours.**

This course emphasizes PLC programming, connections, installations, and start-up procedures. Topics include introductory programming, PLC functions and terminology, processor unit and power supply, introductory numbering systems, relay/programming logic, and field wiring/installation and start-up. Upon course completion, students will be able to identify inputs and outputs, list capabilities of system, monitor system operation, recognize ROM and RAM functions, and recognize binary and digital number systems.

**INTERDISCIPLINARY STUDIES (IDS)**

**IDS 115. FORUM. – 1 hour. C**

PREREQUISITE: Minimum 3.0 GPA.

In this course, credit is given in recognition of attendance at academic lectures, concerts, and other events. IDS 115 requires attendance at designated events which are chosen from various lectures, cultural events and programs given at the college or in the community. IDS 115 may be repeated for credit.

**IDS 200. COLLEGE SCHOLARS BOWL WORKSHOP.  
– 1 hour. C**

PREREQUISITE: As required by program.

This course offers the student preparation, practice, and participation in the College Scholars Bowl Program and competition. IDS 200 may be repeated for credit.

**MACHINE TOOL TECHNOLOGY (MTT)**

**MTT 107. MACHINING CALCULATIONS I. – 3 hours.**

PREREQUISITE: As determined by college.

This course introduces basic calculations as they relate to machining occupations. Emphasis is placed on basic calculations and their applications in the machine shop. Upon completion, students should be able to perform basic shop calculations. This course is aligned with NIMS certification standards.

**MTT 108. MACHINE HANDBOOK FUNCTIONS I.  
– 3 hours.**

PREREQUISITE: As determined by college.

This course covers the machinist's handbook. Emphasis is placed on formulas, tables, usage and related information. Upon completion, students should be able to use the handbook in the calculation and set up of machine tools. This course is aligned with NIMS certification standards.

**MTT 134. LATHE OPERATIONS I. – 3 hours.**

This course includes more advanced lathe practices such as set-up procedures, work planning, inner- and outer-diameter operations, and inspection and process improvement. Additional emphasis is placed on safety procedures. Upon completion, students will be able to apply advanced lathe techniques. MTT 134/135 are suitable substitutes for MTT 129. This course is aligned with NIMS standards.

**MTT 135. LATHE OPERATIONS I LAB. – 3 hours.**

This course includes more advanced lathe practices such as set-up procedures, work planning, inner- and outer-diameter operations, and inspection and process improvement. Additional emphasis is placed on safety procedures. Upon completion, students will be able to apply advanced lathe techniques. MTT 134/135 are suitable substitutes for MTT 129. This course is aligned with NIMS standards.

**MTT 137. MILLING I. – 3 hours.**

This course covers manual milling operations. Emphasis is placed on related safety, types of milling machines and their uses, cutting speed, feed calculations, and set-up and operation procedures. Upon completion, students should be able to apply manual vertical milling techniques to produce machine tool projects. This course is aligned with NIMS certification standards.

**MTT 138. MILLING I LAB. – 3 hours.**

This course provides basic knowledge of milling machines. Emphasis is placed on types of milling machines and their uses, cutting speed, feed calculations, and set-up procedures. Upon completion, students should be able to apply milling techniques to produce machine tool projects. This course is aligned with NIMS certification criteria.

**MTT 140. BASIC COMPUTER NUMERICAL CONTROL  
TURNING PROGRAMMING I. – 3 hours.**

This course covers concepts associated with basic programming of a computer numerical control (CNC) turning center. Topics include

basic programming characteristics, motion types, tooling, workholding devices, setup documentation, tool compensations, and formatting. Upon completion, students should be able to write a basic CNC turning program that will be used to produce a part. This course is aligned with NIMS certification standards.

**MTT 141. BASIC COMPUTER NUMERICAL CONTROL MILLING PROGRAMMING I. – 3 hours.**

This course covers concepts associated with basic programming of a computer numerical control (CNC) milling center. Topics include basic programming characteristics, motion types, tooling, workholding devices, setup documentation, tool compensations, and formatting. Upon completion, students should be able to write a basic CNC milling program that will be used to produce a part. This course is aligned with NIMS certification standards.

**MTT 147. INTRODUCTION TO MACHINE SHOP I. – 3 hours.**

This course introduces machining operations as they relate to the metalworking industry. Topics include machine shop safety, measuring tools, lathes, saws, milling machines, bench grinders, and layout instruments. Upon completion, students will be able to perform the basic operations of measuring, layout, drilling, sawing, turning, and milling. This is a CORE course. MTT 100 is a suitable substitute for MTT 147/148.

**MTT 148. INTRODUCTION TO MACHINE SHOP I LAB. – 3 hours.**

This course provides practical application of the concepts and principles of machining operations learned in MTT 147. Topics include machine shop safety, measuring tools, lathes, saws, milling machines, bench grinders, and layout instruments. Upon completion, students will be able to perform the basic operations of measuring, layout, drilling, sawing, turning, and milling. This is a CORE course. MTT 100 is a suitable substitute for MTT 147/148. This course is aligned with NIMS certification standards.

**MTT 149. INTRODUCTION TO MACHINE SHOP II. – 3 hours.**

This course provides additional instruction and practice in the use of measuring tools, lathes, milling machines, and grinders. Emphasis is placed on setup and operation of machine tools including the selection of work holding devices, speeds, feeds, cutting tools and coolants. Upon completion, students should be able to perform intermediate level procedures of precision grinding, measuring, layout, drilling, sawing, turning, and milling. This is a CORE course and is aligned with NIMS certification standards. MTT 149/150 are suitable substitutes for MTT 103.

**MTT 150. INTRODUCTION TO MACHINE SHOP II LAB. – 3 hours.**

This course provides additional instruction and practice in the use of measuring tools, lathes, milling machines, and grinders. Emphasis is placed on setup and operation of machine tools including the selection of work holding devices, speeds, feeds, cutting tools and coolants. Upon completion, students should be able to perform intermediate level procedures of precision grinding, measuring, layout, drilling, sawing, turning, and milling. This is a CORE course and is aligned with NIMS certification standards. MTT 149/150 are suitable substitutes for MTT 103.

**MTT 162. PRECISION GRINDING. – 3 hours.**

This course includes more advanced precision grinder practices such as set-up procedures, work planning, surface grinding, cylindrical grinding, tool and cutter grinding, and inspection and process improvement. Additional emphasis is placed on safety procedures. Upon completion, students will be able to apply advanced precision grinding techniques. This course is aligned with NIMS standards. MTT 146 is a suitable substitute for MTT 162 & MTT 163.

**MTT 163. PRECISION GRINDING LAB. – 3 hours.**

This course provides practical application of the concepts and principles of precision grinding learned in MTT 161. Topics include set-up procedures, work planning, surface grinding, cylindrical grinding, tool and cutter grinding, and inspection and process improvement. Additional emphasis is placed on safety procedures. Upon completion, students will be able to apply advanced precision grinding techniques. This course is aligned with NIMS standards. MTT 146 is a suitable substitute for MTT 162 & MTT 163.

**MTT 212. ADVANCED COMPUTER NUMERICAL CONTROL TURNING. – 3 hours.**

This course details the use of canned cycles and subprograms in computer numerical control (CNC) turning programs. Upon completing this course, the student should be able to write CNC turning programs using canned cycles and subprograms.

**MTT 213. ADVANCED COMPUTER NUMERICAL CONTROL MILLING. – 3 hours.**

This course details the use of canned cycles and subprograms in computer numerical control (CNC) milling programs. Upon completing this course, the student should be able to write CNC milling programs using canned cycles and subprograms.

**MTT 218. COMPUTER INTEGRATED MANUFACTURING (CIM). – 3 hours.**

This course is a basic introduction to concepts related to the computer integrated manufacturing (CIM) process. Students cover the design requirements associated with such a cell (center), how a center is integrated into the full system, and the technician's role in the process improvement of not only the cell but the full CIM system. Related safety and inspection and process adjustment are also covered.

**MTT 241. CNC MILLING LAB I. – 3 hours.**

This course covers basic (3-axis) computer numeric control (CNC) milling machine setup and operating procedures. Upon completion, the student should be able to load a CNC program and setup and operate a 3-axis CNC milling machine to produce a specified part. Related safety, inspection, and process adjustment are also covered.

**MTT 242. CNC MILLING LAB II. – 3 hours.**

This course covers advanced (including 4-axis) computer numeric control (CNC) milling machine setup and operating procedures. Upon completion, the student should be able to load a CNC program and setup and operate a CNC milling machine (including 4-axis) to produce a specified part. Related safety and inspection and process adjustment are also covered.

**MTT 243. CNC TURNING LAB I. – 3 hours.**

This course covers basic computer numeric control (CNC) turning machine setup and operating procedures (inner diameter and outer diameter). Upon completion, the student should be able to load a CNC

program and setup and operate a CNC turning machine to produce a simple part. Related safety and inspection and process adjustment are also covered.

**MTT 244. CNC TURNING LAB II. – 3 hours.**

This course covers advanced computer numeric control (CNC) turning machine setup and operating procedures. Upon completion, the student should be able to load a CNC program and setup and operate a CNC turning machine to produce a specified part. Related safety and inspection and process adjustment are also covered.

**MESSAGE THERAPY (MSG)**

**MSG 101. INTRODUCTION TO THERAPEUTIC MESSAGE. – 2 hours.**

The purpose of this course is for students to comprehend foundational information related to the profession of therapeutic massage. Specific topics include: history of therapeutic massage, professional ethics and standards of practice, regulatory agencies and their requirements, client and therapist's professional relationships, communication skills, and an overview of types of therapeutic massage.

**MSG 102. THERAPEUTIC MESSAGE LAB I. – 3 hours.**

This course provides foundational information related to massage therapy. Students gain knowledge related to purposes, effects, applications, benefits, indications and contraindications for various types of massage therapy. Additionally, students learn procedures and precautions for various types of massage therapies. Specific topics include full body western (Swedish) massage, hot and cold therapies, stretching, and documentation guidelines. Special emphasis is placed on professional behaviors, proper draping, and body mechanics. At the conclusion of this course students will be able to perform various types of full body therapeutic massage techniques and document their activities.

**MSG 103. ANATOMY AND PHYSIOLOGY. – 3 hours.**

This course provides students with an overview of the basic anatomy and physiology of the human body. Emphasis is placed on the importance of maintaining homeostasis. At the conclusion of this course students will have a basic understanding of the various systems of the body and the effects of massage on these systems. Students will demonstrate this knowledge through cognitive and performance based measurement.

**MSG 104. MUSCULOSKELETAL AND KINESIOLOGY I. – 3 hours.**

This course introduces students to concepts related to the study of muscle movement. As part of this course students learn the interaction of muscles and various bony landmarks of the skeletal system. Students further learn how to position individuals in preparation for therapeutic massage of various muscle groups. Students will demonstrate this knowledge through cognitive and performance based measurement.

**MSG 105. THERAPEUTIC MESSAGE SUPERVISED CLINICAL I. – 2 hours.**

In this course, students are required to demonstrate competency in specific therapeutic massage techniques including treatment preparation, use of proper techniques, client progress, and documentation. Students are required to perform a minimum of 45 hours of hands-on client massages.

**MSG 200. BUSINESS AND MARKETING PLANS.**

**– 1 hour.**

During this course, students are also taught ethical business management and professional development. This course is designed to help students to prepare for ethical decision making in professional practice while assisting in the development of their emerging identities as professional licensed massage therapists. Emphasis is placed on building and retaining clientele, communication skills, customer skills, customer services, continuing education and setting goals. Upon completion, the student should be able to list the types of communication skills, state personal goals, and develop a business and marketing plan.

**MSG 201. THERAPEUTIC MESSAGE FOR SPECIAL POPULATIONS. – 2 hours.**

In this course, students learn to adapt massage sessions to the needs of special populations such as pregnant women, infants, elderly, and the terminally ill. Topics include technique variations, length of session, contraindications, cautions, considerations for survivors of abuse, and possible benefits. Upon completion of this course, students will be able to discuss and demonstrate techniques for performing therapeutic massage for special populations.

**MSG 202. THERAPEUTIC MESSAGE LAB II. – 3 hours.**

**PREREQUISITE: MSG 102.**

Students learn advanced massage therapy techniques building upon previously gained knowledge and skills. Upon completion students will be able to apply specific therapeutic massage techniques to various regions of the body.

**MSG 203. PATHOLOGY. – 3 hours.**

This course presents baseline information on pathologies which massage therapists may encounter in clinical practice including conditions of the musculoskeletal, neurological, cardiovascular, lymphatic, integumentary, digestive, endocrine, and immune systems. Content will include etiology, symptomatology, medical approaches to treatment and the potential positive or negative impact of massage.

**MSG 204. MUSCULOSKELETAL AND KINESIOLOGY II. – 3 hours.**

In this course, students learn advanced study of the interaction of the muscular-skeletal system to include palpation techniques of the appendicular regions of the body. Students will demonstrate this knowledge through cognitive and performance based measurement.

**MSG 205. THERAPEUTIC MESSAGE SUPERVISED CLINICAL II. – 2 hours.**

In this course, students are required to demonstrate competency in specific advanced therapeutic techniques including treatment preparation, use of proper techniques, client progress, and documentation. Students are required to perform a minimum of 45 hours of hands-on client massages.

**MSG 206. LICENSURE EXAM REVIEW. – 1 hour.**

This course provides a consolidated and intensive review of the basic areas of expertise needed by the entry-level massage therapist. Upon completion, the student should be able to pass a comprehensive exam on information covered in the therapeutic massage program.