Industrial Technology - Automotive Management Technology

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Automotive Technology Department
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631-794-6292
School of Engineering Technology

Bachelor of Science Degree

This is a four-year program offered by the Automotive Technology Department. Students may matriculate on a full-time or part-time basis.

The Bachelor of Science in Automotive Management Technology program is designed to develop the requisite skills for management positions in automotive or related fields. Specifically, the program will provide advanced training in such areas as personnel management and motivation, customer relations, and community relations. Additionally, training is provided in business related topics such as accounting, financing and leasing, and occupational safety.

Students will learn to enhance their ability to manage personnel, maintain successful and mutually rewarding relationships with customers, and successfully manage the business and financial aspects of the enterprise. This Bachelor of Science degree will provide, for a person with technical training and experience, the skills and credentials necessary to advance into management level positions.

Students are required to take a common core of liberal arts and science courses and a series of curriculum specific business management courses.

Typical Employment Opportunities:

Automotive Retail Chain Manager
Automotive Parts Manager
Automotive Service Manager
Automotive Business Manager
Automotive Financing/Leasing Manager
Fleet Management
Vehicle Manufacturer District Service Manager

Automotive Management Technology (BS) Program Outcomes:

- Graduates will have the technical skills, knowledge and ability to enter their chosen Automotive Technology discipline.
- Graduates will have good written and oral communication skills.
• Graduates will develop and be able to maintain the necessary knowledge to operate within all areas of land, sea and air (ground support) vehicles, equipment, facilities, service and operations.

This program is accredited by the Association of Technology, Management and Applied Engineering, 1390 Eisenhower Place, Ann Harbor, MI 48108, 734-677-0720 www.atmae.org

Fall 2017: Subject to Revision

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<th>Liberal Arts and Sciences</th>
<th>(60 credits)</th>
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<td>EGL 102 Composition II: Writing About Literature</td>
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<td>Basic Communication (GE)</td>
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<td>The Arts (GE)</td>
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<td>Foreign Language (GE)</td>
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<td>Social &amp; Behavioral Science (GE)</td>
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<tr>
<td>American/Other World/Western Civilization History (GE)</td>
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<td>Humanities (GE)</td>
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<td>Natural Science (GE)</td>
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<td>PHY 136 College Physics II</td>
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<td>Liberal Arts and Sciences Electives</td>
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<td>MTH 130 Calculus with Applications</td>
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Please refer to the General Education and Writing-Intensive Requirement Sections of the College catalog and consult with your advisor to ensure that graduation requirements are satisfied.

<table>
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<tr>
<th>Common Core For All Industrial Technology Students</th>
<th>(12 credits)</th>
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<tr>
<td>BUS 101 Accounting I</td>
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<td>BUS 102 Accounting II</td>
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<td>BUS 300 Operations Management</td>
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<td>MET 104 Computer Aided Drafting and Design (CADD)</td>
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<tr>
<td>Automotive Management Technology Option</td>
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<td>AET 101 Internal Combustion Engine Theory and Servicing</td>
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<td>AET 106 Suspension and Control Systems</td>
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<td>AET 107 Manual Drivetrains and Driveaxles</td>
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AET 150 Automotive Computer Applications 2
AET 208 Automotive Electrical Applications 3
AET 215 Diesel Engines 3
AET 217 Applied Mechanics and Engineering Materials 3
AET 255 Computerized Engine Controls 3
AET 257 Automatic Transmissions 3
IND 308 Occupational Safety 3
IND 316 Customer Relations and Quality 3
IND 317 Automotive Financing and Leasing 3
IND 320 Fleet Management 3
IND 408 Automotive Business Management 3
AET 410W Senior Project 3
Technical Elective: 9
(AET, EET, IND, MET, BUS)
Total Credits: 125

Degree Type: BS
Total Required Credits: 125

Course Descriptions

EGL 101 Composition I: College Writing (GE)
This is the first part of a required sequence in college essay writing. Students learn to view writing as a process that involves generating ideas, formulating and developing a thesis, structuring paragraphs and essays, as well as revising and editing drafts. The focus is on the development of critical and analytical thinking. Students also learn the correct and ethical use of print and electronic sources. At least one research paper is required. A grade of C or higher is a graduation requirement. Note: Students passing a departmental diagnostic exam given on the first day of class will remain in EGL 101; all others will be placed in EGL 097. Prerequisite is any of the following: successful completion of EGL 097; an SAT essay score (taken prior to March 1, 2016) of 7 or higher; an SAT essay score (taken after March 1, 2016) of 5 or higher; on-campus placement testing. Credits: 3

EGL 102 Composition II: Writing About Literature
This is the second part of the required introductory English composition sequence. This course builds on writing skills developed in EGL 101, specifically the ability to write analytical and persuasive essays and to use research materials correctly and effectively. Students read selections from different literary genres (poetry, drama, and narrative fiction). Selections from the literature provide the basis for analytical and critical essays that explore the ways writers use works of the imagination to explore human experience. Grade of C or higher is a graduation requirement. Prerequisite(s): EGL 101 Credits: 3

PHY 135 College Physics I (GE)
An integrated theory/laboratory general college physics course without calculus. Topics will include fundamental concepts of units, vectors, equilibrium, velocity and acceleration in linear and rotational motion, force, energy, momentum, fluids at rest and in motion, and oscillatory motion. Laboratory problems, experiments and report writing associated with the topics studied in the theory are performed. Prerequisite(s): MTH 129 Corequisite(s): PHY 135L Credits: 4

PHY 136 College Physics II
A continuation of PHY 135. Topics will include heat, electricity, magnetism, light and optics. Prerequisite(s): PHY 135 Corequisite(s): PHY 136L Credits: 4

MTH 110 Statistics (GE)
Basic concepts of probability and statistical inference. Included are the binomial, normal, and chi-square distributions. Practical applications are examined. Computer assignments using Minitab form an integral part of the course. Prerequisite(s): MP2 or MTH 015 Credits: 3

MTH 129 Precalculus with Applications
This is a precalculus course with applications from various disciplines including technology, science, and business. Topics include families of functions, mechanics of functions, exponential and logarithmic functions, trigonometric functions and complex numbers. The emphasis is on applications and problem solving. A graphing calculator is required. Note: Students completing this course may not receive credit for MTH 117. Prerequisite(s): MP3 or MTH 116 Credits: 4

MTH 130 Calculus with Applications
This is a calculus course for those not majoring in Mathematics, Engineering Science or Computer Science. Topics include the derivative, differentiation of algebraic, trigonometric, exponential and logarithmic functions, applications of the derivative and the definite integral. Applications are taken from technology, science, and business. Problem solving is stressed. A graphing calculator is required. Note: Students completing this course will not receive credit for MTH 150. Prerequisite(s): MP4 or MTH 117 or 129 Credits: 4

BUS 101 Accounting I
Fundamental accounting concepts and principles are covered through an understanding of the following topics: accounting as an information system; analyzing a transaction; the accounting cycle; accounting for both service enterprises and merchandising businesses; deferrals and accruals; reversing entries; systems design; accounting for cash, receivables, temporary investments and inventory; payroll accounting. Students apply concepts to the preparation of special journals, subsidiary ledgers, worksheets and financial statements. Credits: 3

BUS 102 Accounting II
Continued development of the principles and concepts introduced in Accounting I. The following topics are included: emphasis on further understanding of generally accepted accounting principles; plant assets; intangible assets; determination of depreciation, depletion and amortization; accounting for partnerships and corporations; long term liabilities; investments in bonds and stock; statement of cash flows; managerial accounting; accounting for manufacturing operations; budgeting and standard costs systems. Prerequisite(s): BUS 101 with a grade of C or higher Credits: 3

BUS 300 Operations Management
This course undertakes an examination of the role of operations within manufacturing and service organizations. Emphasis is placed upon recognizing operational opportunities and tradeoffs, and employing quantitative and qualitative tools and decision support systems to assist strategic and operational decision-making. The general functions of operations management as applied to the transformation process are covered. Some of the important topics include but not limited to Forecasting, Statistical Quality Control, Inventory Management, Linear Programming, and Transportation Models. Note:
Students who have previously completed IND 301 cannot receive credit for BUS 300. Prerequisite(s): BUS 240 or MTH 110 Credits: 3

**MET 104 Computer Aided Drafting and Design (CADD)**
This course introduces computer aided drafting and design (CADD) in 2D drafting and 3D solid modeling. Students will learn traditional drafting techniques, such as orthographic projection, dimensioning, and tolerancing, and apply their drafting skill though 2D CAD software. Students will also learn 3D solid modeling based on parametric constraints, dimensions and features such as extrude, revolve, sweep, loft, hole, fillet and shell. In addition, the course teaches students how to create assemblies and 2D engineering drawings from the existing 3D solids. Laboratory exercises will be assigned to the students for hands-on experience with the related topics. This course is equivalent to the combination of GPH103, GPH104, and MET211. Corequisite(s): MET 104L Credits: 3

**AET 101 Internal Combustion Engine Theory and Servicing**
This is a theory/laboratory course designed to introduce the student to basic heat engine types, their physical configurations and various engine operating cycles. Analytic pressure-volume diagrams are utilized to illustrate the effects of gasoline engine design on performance and combustion requirements. Topics discussed include design, construction, inspection techniques and servicing of the internal combustion engine and its components. Laboratory activities are performed to provide relevant hands-on experience to the students. Also engine aspiration, combustion using the principles of fluid dynamics and thermodynamics, volumetric efficiency and fuel metering systems will be discussed in this course. Corequisite(s): AET 101L Credits: 3

**AET 106 Suspension and Control Systems**
This is a theory/laboratory course designed to provide a thorough understanding of the design, construction and operation of automotive chassis and suspension systems. Topics will include a study of the vehicle frame, suspension, steering, wheels, tires and braking systems. Emphasis is directed to the analysis of the vehicle's systems during operation. Related laboratory activities and demonstrations are included in the required laboratory section (AET106L). Credits: 3

**AET 107 Manual Drivetrains and Driveaxles**
This is a theory/laboratory course designed to provide a thorough understanding of the vehicle's drive train. Topics will include the design, construction, inspection techniques, and service and associated repair operations of the drivetrain and driveaxle components. The topics will include clutches, propeller shafts, universal joints, CV joints, manual transmissions, differentials and other components used in both front and rear wheel drive systems. Related laboratory activities and demonstrations are included in the required laboratory section. Corequisite: AET 107L Credits: 3

**AET 150 Automotive Computer Applications**
This is a theory/laboratory course designed to introduce the student to basic computer utilization and programming. Topics include a thorough introduction to personal computers, instruction in and development of basic programming. Students will be required to develop basic programs for technical automotive problem solving and practical automotive applications. Extensive use of the computer laboratory will be provided in the required laboratory section (AET150L). Credits: 2

**AET 208 Automotive Electrical Applications**
This is a theory/laboratory course designed to introduce the student to basic automotive-oriented electrical principles as they relate to both A.C. and D.C. circuits utilized in contemporary automotive electrical systems. The course also covers automotive electrical and electronic systems and their application. The student is required to utilize and understand the operation of various types of electronic equipment, including both computerized engine and emissions analyzers. Related laboratory activities and demonstrations are included in the required laboratory section (AET 208L). Prerequisite(s): AET 150 or MET 109 Credits: 3
AET 215 Diesel Engines
This is a theory/laboratory course emphasizing in the diesel engine operations and servicing. Topics will include the study of current high-pressure diesel fuel-injection systems and the diesel engine combustion process with respect to fuel injection and combustion changer design. Specific examination of design and performance characteristics of diesel engine air induction, scavenging, supercharging and turbo-charging systems will be covered. Students will also analyze engine governing methods and devices necessary for control, as well as current methods and devices utilized in solving common diesel engine starting problems. Relevant laboratory activities and demonstrations are provided to support the trainings provided during the lecture hours. Prerequisite(s): AET 101 or AET 104 Corequisite: AET 215L Credits: 3

AET 217 Applied Mechanics and Engineering Materials
This course is designed to introduce the fundamental principles of applied engineering mechanics and materials. Topics include forces, couples, equilibrium, friction, kinematics of rectilinear and rotational motion, work, energy and power. Principles and applications of hydraulics are also discussed. Engineering materials topics include classifications, structure, properties, phase transformation and heat treatment of metals, inspection and testing techniques of automotive engineering materials. Related problem-solving activities are included. Prerequisite(s): PHY 135 and MTH 130 Credits: 3

AET 255 Computerized Engine Controls
This is a theory/laboratory course developed to provide the student with a working understanding of automotive electronics and computerized engine control systems. The course includes computerized fuel and emission control systems, with emphasis on the diagnosis of basic engine malfunctions. The student will also analyze the principles and operation of feedback type systems. Electronic diagnostic equipment is used to identify system malfunctions in order to indicate necessary corrective actions. Laboratory activities provide an opportunity for a practical application of diagnostic procedures on current vehicles which is covered in the laboratory section (AET255L). Prerequisite(s): AET 208 Credits: 3

AET 257 Automatic Transmissions
This is a theory/laboratory course dealing with the transmission of power in automobiles, emphasizing contemporary automatic transmissions. Topics covered include applications of the principles of the planetary gear systems, fluids, seals, hydrodynamic drives, hydraulic controls and application devices. The power flow within selected automatic transmissions is discussed and is supported with related activities in the required laboratory section (AET257L). Prerequisite(s): AET 107 Credits: 3

IND 308 Occupational Safety
This course introduces the fundamentals of occupational safety and examines potential accidents, which may occur in the modern work environment that employs complex materials, processes and technologies. We will review the history and safety legislation of the regulatory agency OSHA. Acquiring and analyzing hazard information, organizing and setting up occupational safety programs, accident causes, and their control and accident record keeping will be addressed. Credits: 3

IND 316 Customer Relations and Quality
This course covers the basics of customer relations and quality in industry. The course includes discussion of quality management principles and standards as well as feedback techniques to measure and assure customer satisfaction. The American Customer Satisfaction Index, J.D. Power and Associates Reports, Malcolm Baldrige National Quality Award, and International Organization for Standardization (ISO) Automotive Quality System QS-9000 registration criteria will also be discussed. Note: Students completing this course cannot receive credit BUS 316. Prerequisite(s): BUS 300 Credits: 3

IND 317 Automotive Financing and Leasing
This course is designed to familiarize the student with the basic economic problems and principles that exist when a vehicle or other equipment is purchased or leased. Problems are centered around the cost of capital, capital budgeting and
investment analysis. Also discussed are repayment schedules including amortized loans, refinancing and variable rate loans. Prerequisite(s): MTH 110 Credits: 3

**IND 320 Fleet Management**
This course is designed to provide students with a practical discussion and examination of the fleet management function, as well as how it relates to an organization. Included in the course are automotive specific computer applications such as service establishment management software. Also, the course will include discussions on business plans, fleet utilization and replacement, human resources, parts management, safety requirements and data services. This course will consist of presentations, case studies, and a review of management literature. Credits: 3

**IND 408 Automotive Business Management**
This is a theory course developed to give the student an understanding of employment practices and opportunities in the automotive industry. Topics include: management principles and structures, tasks and duties of a service manager including interview techniques, performance evaluations, and financial operations of a service facility. The course will provide the student with an understanding of owner communications, shop capacity management, leadership effectiveness, organizational behavior, and promotional strategies. Course will include related problem solving activities, and final project. Prerequisite(s): Junior class standing and BUS 300 Credits: 3

**AET 410W Senior Project**
An independent investigation of a technical or managerial problem of interest to both the student and a faculty member who shall act as Project Advisor. The project selected will utilize skills and knowledge acquired in earlier AET studies. Prerequisite(s): Senior status and permission of the Department Chair Credits: 3

Admission to Farmingdale State College - State University of New York is based on the qualifications of the applicant without regard to age, sex, marital or military status, race, color, creed, religion, national origin, disability or sexual orientation.