

# THE SCHOOL OF ENGINEERING, AVIATION, CONSTRUCTION, AND TECHNOLOGY

## Interim Chair

Dr. Michael "Sean" June  
(859) 622-3232  
Whalin 302

## Faculty

A. Al-Helu, J. Dodd, B. Dyer, M. Farris, D. Field, K. Foltz, J. Glass, M.S. June, K. Knezevich, R. Richardson, L. Ross, D. Sinnett, N. Wang, and J. Wilson.

The School of Engineering, Aviation, Construction, and Technology: Manufacturing Engineering, Aviation, Construction Management, and Engineering Technology Management.

## Department Goals

The School of Engineering, Aviation, Construction, and Technology seeks to provide an educational experience relevant to current and future societal needs to meet global economic and industrial trends.

Programs in Applied Engineering and Technology prepare professionals for careers in Aviation, Construction and Engineering Technology Management through the Bachelor of Science degree programs; prepare technicians for careers in Applied Engineering and Computer Electronics Technology through concentrations in the Associate of Applied Science in Technology degree program; and to provide programs of quality instruction and professional services to the University and to the community.

### Manufacturing Engineering

The Bachelor of Science degree in Manufacturing Engineering (MFE) at Eastern Kentucky University is designed to prepare graduates to become practicing manufacturing engineers. The program provides students with the skills to design, analyze and modify the processes and systems used to make products in the most time-efficient, cost-effective way possible while maintaining safety and product quality in environmentally friendly ways.

Students will gain expertise and practical knowledge in the major areas of manufacturing materials and processes, design for manufacturability, lean manufacturing, quality and process control, safety, automation and robotics. Graduates will be able to employ a strong base of fundamental engineering and management skills to effectively integrate people, technology, machines and capital to create positive change as they are involved in the manufacturing process from design to production to finished product.

The program offers a variety of concentrations to choose from:

- **Quality and Lean Manufacturing**  
Quality and Lean Manufacturing prepares students for careers as quality engineers, automation engineers, controls engineers and engineering managers.
- **Advanced Manufacturing**

Advanced Manufacturing prepares students for careers as manufacturing systems design engineers, robotics engineers, additive manufacturing engineers and automation engineers.

- **Industrial Health and Safety**

Industrial Health and Safety prepares students for careers as safety engineers, facility design engineers, communication engineers and engineering managers.

## Aviation

The EKU aviation program offers a Bachelor of Science degree in Aviation with four concentrations: Aerospace Management, Aerospace Technology, Unmanned Aircraft Systems, and Professional Flight. These concentrations combine courses in business management, communication, math, computer science and general education. The Aerospace Management concentration prepares students for exciting professional careers in all aspects of the aerospace industry from a management perspective whereas the Professional Flight concentration prepares students for careers as pilots.

The Professional Flight concentration Program is an FAA Part 141 approved Flight School and the only university program in Kentucky to offer the 1000-hour Restricted ATP certificate. This program provides future pilots with the flight time needed to join the rewarding world of professional aviation.

Starting with the fall 2022 semester, the Unmanned Aircraft Systems (UAS) concentration will prepare students for careers in the rapidly expanding area of UAS, including detailed knowledge of UAS-specific operations, safety, technology, regulations and industry uses. The demand for certification in this area is high as there were more than 488,000 commercial UAS registered in the United States by the end of 2021. Industries that utilize drone technology include agriculture, construction, law enforcement and more.

The Aerospace Technology (AT) degree is a degree-completion concentration. By adding upper division aerospace management and operations studies, the Bachelor's degree AT concentration is specifically designed to complete a two-year community college degree with a heavy technical aviation course load. Examples of aviation technical degrees include Airframes & Power Plants (A&P), a two-year helicopter and/or airplane proflight degree, any two-year career technical (CTE) degree partnered with a local flight school, any two-year air traffic control program, and/or any two-year aerospace management program, and/or two-year Unmanned Aircraft Systems (UAS) programs.

Additionally, non-degreed airline pilots with the Airline Transport Pilot (ATP) certificate may complete their bachelor's degree with this concentration.

## Construction Management

Graduates of the Construction Management program are prepared for careers with general contracting firms, starting in a variety of management positions. Typical entry-level positions include: assistant project manager, estimator, superintendent, project scheduler, cost engineer, and field engineer. The Construction Management program is accredited by the American Council for Construction Education. Graduates of this program will have oral, written and graphic communication skills for successful performance in a construction environment; possess functional computer skills including the utilization of general and construction application software; apply mathematical and scientific skills in the management and execution of construction projects; apply the concepts of management, accounting, economics

and ethics in the management and execution of construction projects; possess a basic understanding of the science of materials and the methods by which they are placed into service; possess the essential plan reading, quantity takeoff and pricing skills to function as a junior estimator; be able to prepare a project budget, analyze cost reports and make cash flow projections for a project; be able to prepare a project schedule, monitor progress toward completion, and update the schedule as needed; possess a basic knowledge of OSHA standards and be able to establish and enforce a safety plan on a job site, be able to interpret site plans, establish horizontal and vertical control on a site, and perform layout for buildings and utilities; be able to administer situations on a project site, including evaluation of subcontractor pay requests, writing of purchase orders, and recording change orders, subcontracts, shop drawings, and daily reports; and perform in an acceptable manner in internship work assignments.

## Engineering Technology Management

Graduates of the Engineering Technology Management Program are prepared for professional careers in technology related businesses. These businesses offer many opportunities to pursue exciting, challenging and rewarding careers that require technical knowledge and managerial skills. Engineering Technology Management prepares individuals for entry-level positions that may include: manufacturing engineer, production engineer, industrial supervisor, industrial engineer, industrial technician, and quality engineer.

Graduates of Engineering Technology Management will be able to relate terminology, techniques and methodology to technical managerial concepts; demonstrate the ability to formulate and apply technical problem solving and managerial concepts; and be able to apply the concepts of mathematics and the physical sciences to solve technical problems. The BS degree program in Engineering Technology Management is accredited by the Association of Technology, Management, and Applied Engineering.

## Associate of Applied Science

The Department of Applied Engineering and Technology also offers an Associate of Applied Science degree programs (two-year programs) in Technology. The Associate of Applied Science degree in Technology offers the student a choice of technical concentration in: Applied Engineering or Computer Electronics. The AAS degree program in Technology is accredited by the Association of Technology, Management, and Applied Engineering.

## Associate of Applied Science - Technology

### Applied Engineering Concentration

Graduates of this program concentration are prepared to become applied engineering technicians who work in product design, research and development, manufacturing, and service related jobs. Students will become familiar with the technologies that are essential for business and industry wanting to remain competitive in a global economy.

Graduates will demonstrate proficiency in the fundamentals of chemistry/physics, electricity and electronics, manufacturing processes, lean, quality, practical statistical methods, and computer aided drafting or design applications to communicate and solve design problems.

## Computer Electronics Concentration

Graduates of the Computer Electronics (CE) program concentration are prepared for rewarding careers as computer electronic technicians in the public and private sector. Computer Electronics program graduates are qualified to obtain jobs in a wide variety of information technology, manufacturing and service industries. These jobs require skilled technicians for installing, troubleshooting and maintaining microprocessor-based systems, programmable logic controllers, computer hardware and software.

Graduates of the CE concentration of the AAS in Technology program will demonstrate fundamental knowledge in electricity/electronics at the technician's level; demonstrate proficiency in basic computing skills; demonstrate proficiency in basic networking skills relevant to LAN/WAN environments; and demonstrate effective communication skills while conveying information to technical and non-technical audiences.

## Bachelor's

- Aviation, Bachelor of Science with a Concentration in Aerospace Management (B.S.) (<http://catalogs.eku.edu/undergraduate/science-technology-engineering-mathematics/applied-engineering-technology/aviation-concentration-aerospace-management-bs/>)
- Aviation, Bachelor of Science with a Concentration in Aerospace Technology (B.S.) (<http://catalogs.eku.edu/undergraduate/science-technology-engineering-mathematics/applied-engineering-technology/aviation-concentration-aerospace-technology-bs/>)
- Aviation, Bachelor of Science with a Concentration in Professional Flight (B.S.) (<http://catalogs.eku.edu/undergraduate/science-technology-engineering-mathematics/applied-engineering-technology/aviation-concentration-professional-flight-bs/>)
- Aviation, Bachelor of Science with a Concentration in Unmanned Aircraft Systems (B.S.) (<http://catalogs.eku.edu/undergraduate/science-technology-engineering-mathematics/applied-engineering-technology/aviation-concentration-unmanned-aircraft-systems-bs/>)
- Construction Management, Bachelor of Science (B.S.) (<http://catalogs.eku.edu/undergraduate/science-technology-engineering-mathematics/applied-engineering-technology/construction-management-bs/>)
- Engineering Technology Management, Bachelor of Science with a Concentration in Manufacturing (B.S.) (<http://catalogs.eku.edu/undergraduate/science-technology-engineering-mathematics/applied-engineering-technology/engineering-technology-management-concentration-manufacturing-bs/>)
- Engineering Technology Management, Bachelor of Science with a Concentration in Technology (B.S.) (<http://catalogs.eku.edu/undergraduate/science-technology-engineering-mathematics/applied-engineering-technology/engineering-technology-management-concentration-bs/>)
- Management Information Systems, Bachelor of Science with a Concentration in Business Analytics (B.S.) (<http://catalogs.eku.edu/undergraduate/science-technology-engineering-mathematics/applied-engineering-technology/management-information-systems-concentration-business-analytics-bs/>)
- Management Information Systems, Bachelor of Science with a Concentration in Security Systems (B.S.) (<http://catalogs.eku.edu/undergraduate/science-technology-engineering-mathematics/applied-engineering-technology/management-information-systems-concentration-security-systems-bs/>)

- Manufacturing Engineering, Bachelor of Science with a Concentration in Advanced Manufacturing (B.S.) (<http://catalogs.eku.edu/undergraduate/science-technology-engineering-mathematics/applied-engineering-technology/manufacturing-engineering-concentration-advanced-manufacturing-bs/>)
- Manufacturing Engineering, Bachelor of Science with a Concentration in Industrial Health and Safety (B.S.) (<http://catalogs.eku.edu/undergraduate/science-technology-engineering-mathematics/applied-engineering-technology/manufacturing-engineering-concentration-industrial-health-safety-bs/>)
- Manufacturing Engineering, Bachelor of Science with a Concentration in Quality and Lean Manufacturing (B.S.) (<http://catalogs.eku.edu/undergraduate/science-technology-engineering-mathematics/applied-engineering-technology/manufacturing-engineering-bs/>)

## Accelerated

- Engineering Technology Management, Bachelor of Science (B.S.) and Technology Management Master of Science (M.S.) [Manufacturing Concentration] Accelerated 3+2 Dual Degree Program (<http://catalogs.eku.edu/undergraduate/science-technology-engineering-mathematics/applied-engineering-technology/engineering-technology-management-bs-technology-management-ms-manufacturing-concentration-accelerated-3-2-dual-degree-program/>)
- Engineering Technology Management, Bachelor of Science (B.S.) and Technology Management Master of Science (M.S.) [Technology Concentration] Accelerated 3+2 Dual Degree Program (<http://catalogs.eku.edu/undergraduate/science-technology-engineering-mathematics/applied-engineering-technology/engineering-technology-management-bs-technology-management-ms-technology-concentration-accelerated-3-2-dual-degree-program/>)

## Associate's

- Technology, Associate of Applied Science (A.A.S.) (<http://catalogs.eku.edu/undergraduate/science-technology-engineering-mathematics/applied-engineering-technology/technology-aas/>)

## Minor

- Aerospace Management, Minor (<http://catalogs.eku.edu/undergraduate/science-technology-engineering-mathematics/applied-engineering-technology/aerospace-management-minor/>)
- Aviation (Flight), Minor (<http://catalogs.eku.edu/undergraduate/science-technology-engineering-mathematics/applied-engineering-technology/aviation-flight-minor/>)
- Computer Electronics Technology, Minor (<http://catalogs.eku.edu/undergraduate/science-technology-engineering-mathematics/applied-engineering-technology/computer-electronics-technology-minor/>)
- Construction Management, Minor (<http://catalogs.eku.edu/undergraduate/science-technology-engineering-mathematics/applied-engineering-technology/construction-management-minor/>)
- Engineering Technology Management, Minor (<http://catalogs.eku.edu/undergraduate/science-technology-engineering-mathematics/applied-engineering-technology/engineering-technology-management-minor/>)
- Land Surveying, Minor (<http://catalogs.eku.edu/undergraduate/science-technology-engineering-mathematics/applied-engineering-technology/land-surveying-minor/>)

- Quality Assurance Technology, Minor (<http://catalogs.eku.edu/undergraduate/science-technology-engineering-mathematics/applied-engineering-technology/quality-assurance-technology-minor/>)
- Unmanned Aircraft Systems, Minor (<http://catalogs.eku.edu/undergraduate/science-technology-engineering-mathematics/applied-engineering-technology/unmanned-aircraft-systems-minor/>)

## Certificate

- Land Surveying, University Certificate (<http://catalogs.eku.edu/undergraduate/science-technology-engineering-mathematics/applied-engineering-technology/land-surveying-university-certificate/>)

## Courses

### Applied Engineering Management

#### AEM 195. Computer Aided Drafting. (3 Credits)

I, II. An introductory course in freehand sketching and computer-aided drafting/design. Students will be taught basic CAD commands, tools, multi-view drawings and dimensioning techniques. 2 Lec/2 Lab.

#### AEM 201. Metallic Material Processes. (3 Credits)

I, II. Formerly INT 201. Introduction to manufacturing processes involving metallic materials. Families of processes covered are casting, molding, forming, separating, conditioning, assembling, and finishing. 2 Lec/2 Lab.

#### AEM 202. Introduction to Quality. (3 Credits)

I, II. Formerly INT 202. Prerequisite: STA 215 or 270 and MAT 114 or higher mathematics. Role of statistical thinking in modern quality control. Methods for problem solving, data collection, and process improvement. Deriving actionable conclusions from data analyses. Understanding, quantifying, and reducing variation to improve business performance.

#### AEM 242. Furniture and Cabinet Construction. (3 Credits)

A. Formerly INT 242. Prerequisite: TEC 141. Principles of furniture and cabinet construction, elements of structural design, advanced woodworking operations; care and sharpening of tools related technical information; furniture and cabinet construction and finishing. 2 Lec/2 Lab.

#### AEM 301. Non-Metallic Material Processes. (3 Credits)

II. Formerly INT 301. Introduction to manufacturing processes used to shape or form wood, plastic, and composite materials. Families of processes covered are casting, molding, forming, separating, conditioning, assembling, and finishing. 2 Lec/2 Lab.

#### AEM 308. Methods of Lean Operations. (3 Credits)

I, II. Prerequisite: STA 215 or 270 and MAT 114 or higher. Examination of lean principles, such as value mapping, continuous flow, continuous improvement, determination of customer demand, and standard work. Concepts and implementation of pull, line balancing, lean accounting, FMEA, time studies, and total productive maintenance.

#### AEM 310. Technical Communication. (3 Credits)

I. Prerequisites: ENG 102 and TEC 161. Formerly INT 310. A conceptual approach to computer aided communication systems typically applied in industrial environments. Emphasis will be placed on utilizing computer technology to integrate text and graphics in the preparation of documents and presentation materials. Credit will not be awarded for both AEM 310 and AEM 310W.

**AEM 310W. Technical Communication. (3 Credits)**

I. Prerequisites: ENG 102 or ENG 105 (B) or HON 102, TEC 161. An approach to computer aided written communication typically applied in industrial environment. Emphasis will be placed on utilizing computer technology to integrate text and graphics in the preparation of documents and presentation materials. Credit will not be awarded for both AEM 310 and AEM 310W.

**AEM 320. Warehousing and Material Handling. (3 Credits)**

A. Pre/Corequisites: AEM 202 or INT 202 and AEM 308 or INT 308. Formerly INT 320. A laboratory oriented course that examines basic warehouse layout configurations, material flow, an a critical evaluation of the application of computers to control material flow, plus the use of computer simulation to analyze various warehouse layout options for scheduling, picking and material tracking. 2 Lec/2 Lab.

**AEM 330. Material Testing and Metrology. (3 Credits)**

A. Prerequisites: AEM195, 201 and MAT120. A study of geometric dimensioning and tolerancing as used in detail working drawings and the principles, standards, equipment, and techniques of precision electronic and mechanical measurement. 2 Lec/2 Lab.

**AEM 332. Process Control and Auditing. (3 Credits)**

A. Prerequisite: AEM 202 or INT 202. Formerly INT 332. An advanced study of the Statistical Process Control methods and procedures in industry, and auditing as a method of evaluating the documentation, implementation, and effectiveness of a Quality System.

**AEM 336. Reliability and Sampling. (3 Credits)**

A. Prerequisite: AEM 202 or INT 202. Formerly INT 336. An overview of reliability, testing, and sampling theories. Topics include component and system reliability, product safety, sampling plans, control charts, and standards.

**AEM 338. Engineered Materials Testing. (4 Credits)**

A. Prerequisites: AEM 201, MAT 120 and TEC 190. Structure, composition, properties, tolerances, standards, and common applications of engineering materials. Use of GD&T and techniques for precision electronic and mechanical measurement and testing.

**AEM 349. Applied Learning in Industrial Technology. (0.5-8 Credits)**

I, II. Prerequisite: departmental approval. Formerly INT 349. Work under faculty and field supervisors in placements related to academic studies. One to eight hours credit per semester or summer. Total hours: eight, associate, sixteen, baccalaureate. A minimum of 80 hours work required for each academic credit.

**AEM 352. Robotics and Automated Systems. (3 Credits)**

A. Prerequisite: EET 251. Formerly INT 352. Introduction to fixed and flexible automation equipment with an emphasis placed on industrial robot systems. Topics include robot safety, programming and operation, and effector design, programmable logic controllers, interfacing devices, and sensors. 2 Lec/2 Lab.

**AEM 367. Comp Exam for AAS in Technology, Applied Engineering . (0 Credits)**

Prerequisite: Departmental Approval. Registration is required of all A.A.S. Technology, Applied Engineering majors during their last semester. A comprehensive assessment exam is required.

**AEM 371. Hydraulics and Pneumatics. (3 Credits)**

II. Formerly INT 371. Principles of the operation, construction, control and application of hydraulic and pneumatic components and circuits. The study of control applications includes manual, mechanical, fluid, electrical, and computer controlled fluid circuits. 2 Lec/2 Lab.

**AEM 382. Advanced Material Processing. (3 Credits)**

A. Prerequisites: AEM 201 or INT 201 and AEM 301 or INT 301. Formerly INT 382. A laboratory course involving advanced material processing which includes project planning and management, machining, welding, precision layout, and measuring. Students will design and fabricate projects that include two-part mold designs, CNC machining, and multi-process welding. 2 Lec/ 2 Lab.

**AEM 383. CAD/CAM Integration. (3 Credits)**

A. Prerequisites: AEM 201 or INT 201. Formerly INT 383. The use of computer application software to link data bases created with computer aided design software to computer numerical controlled machine tools. 2 Lec/2 Lab.

**AEM 390. 3-D Parametric Solid Modeling. (3 Credits)**

A. Prerequisites: AEM 195 or INT 195. Formerly INT 390. A study of advanced topics in three-dimensional computer aided design. The content will include advanced modeling and rendering. 2 Lec/2 Lab.

**AEM 392. Computer Aided Machine Drawing. (3 Credits)**

I. Prerequisite: AEM 195 or INT 195. Formerly INT 392. Computer generated detail and assembly drawings. Topics include threads and fasteners, gearing and cams, and dimensioning and tolerancing. 2 Lec/2 Lab.

**AEM 395. Special topics in AEM:\_\_. (2-3 Credits)**

Prerequisite: AEM202. Departmental approval, junior or higher standing. Explores emerging technologies in the area of applied engineering. May be repeated up to a maximum of 9 hours provided subject matter is different each time.

**AEM 397. Advanced Machine Drawing. (3 Credits)**

A. Prerequisites: AEM 390 or INT 390 or MFG 390 and AEM 392 or INT 390 or MFG 392. Formerly INT 397. Advanced machine drawing applications to include detail and assembly drawings, threads and fasteners, gearing and cams. Emphasis on shape description. 2 Lec/Lab 2.

**AEM 406. Integrated Materials Mgmt.. (3 Credits)**

I, II. Prerequisites: AEM 202. Formerly INT 406. A senior course which examines consumer demand characteristics, product bill materials, establishing sales and operations plans, planning and controlling inventory in the supply chain.

**AEM 407. Fundamentals of Project Management. (3 Credits)**

(3) I. Prerequisite: AEM 202. Introduction to project selection, life cycle, planning using scope of work, WBS, CPM, scheduling, execution, resource allocation, expediting and clothing.

**AEM 408. Human Resource Development. (3 Credits)**

I, II. Formerly INT 408. Topics in human relations and production management. To be scheduled the semester before graduation.

**AEM 467. Comprehensive Exam for BS in ETM. (0 Credits)**

A. Prerequisite: Consent of Advisor. Registration is required of all Applied Engineering Management and Engineering Technology Management B.S. majors during their last semester. A comprehensive assessment exam is required.

**AEM 499. Senior Capstone Project. (3 Credits)**

A. Prerequisite: AEM 310, 352, 407 and Senior Standing. Formerly INT 499. A synthesis experience involving the application of theory in solving a realistic industrial problem. Emphasis is placed upon project setup, solution, justification, report and presentation. 2 Lec/2 Lab.

**AEM 506. Six Sigma Quality. (3 Credits)**

A. Formerly INT 506. Prerequisite: AEM 202. A study of six sigma methodology and current practices with an emphasis on key quality drivers and statistical methods for world-class products and companies.

**AEM 530. Design of Experiments. (3 Credits)**

A. Formerly INT 530. Prerequisite: AEM 202. Principles and practices of efficient experiment design for industry. Topics include the philosophy of experiment design, comparison of various designs, hypothesis testing, and the analysis of data.

**Aviation****AVN 105. UAS Safety and Regulations. (3 Credits)**

This course provides an overview of small Unmanned Aircraft Systems (sUAS). Topics include the history of UAS, regulations, remote sensors, imagery equipment, industry and societal implications, career outlooks, ethical considerations, and the basic components required to operate an UAS. This course will prepare students for real-world safe operation of sUAS, and will provide basic understanding of the regulations in preparation for small Unmanned Aircraft Systems FAA 107 certification test. [CFR Part 107 are the Federal Aviation Administration regulations for the certification and operation of small Unmanned Aircraft Systems].

**AVN 150. Introduction to Aviation. (3 Credits)**

A. An introductory course specifically designed for students to obtain a broad understanding of the aviation world including varying aspects of space exploration. Includes a study of aviation history and the general aviation environment.

**AVN 161. Private Pilot- Airplane: Ground (Part 61). (4 Credits)**

A. Prerequisite: MAT 105 or higher with a minimum grade of "C", a minimum score of 22 on the mathematics portion of the ACT, a minimum score of 510 on the mathematics portion of the SAT, or a passing score on an algebra placement test. . Provides aeronautical knowledge and 5 hours flight simulation necessary to prepare student pilots to successfully complete FAA Private Pilot-Airplane written examination.

**AVN 161A. Private Pilot- Airplane (Part 61): Flight I. (1 Credit)**

A. Prerequisite or Corequisite: AVN 161 with "C" grade or better and overall 2.0 GPA. Students receive dual and/or initial solo flight instruction as part of the FAA private pilot SEL certification using FAA part 61 Rules.

**AVN 162A. Private Pilot- Airplane (Part 61): Flight II. (1 Credit)**

Prerequisite: Dept. approval (i.e student must make satisfactory flight progress, as determined by the Aviation Coordinator, before being allowed to register into subsequent AVN flight labs). Students receive remaining flight hours as part of the curriculum leading to FAA private pilot SEL certification using FAA part 61 rules.

**AVN 170. Introduction to Unmanned Aircraft Systems. (3 Credits)**

(3) A. This course provides an introduction to Unmanned Aircraft Systems (UAS). A history of UAS, typical applications and an overview of regulations, airframe and powerplant systems, sensors, ground control stations, airspace, weather, and other foundational skills needed to safely operate UAS in the U.S. airspace systems will be covered.

**AVN 192. Private Pilot- SEL: Ground. (4 Credits)**

A. Provides aeronautical knowledge and 5 hours flight simulation necessary to prepare student pilots to successfully complete FAA Private Pilot written examination.

**AVN 192A. Private Pilot-SEL: Flight I. (1 Credit)**

A. Prerequisite or corequisite: AVN 192 with "C" or better and overall 2.0 GPA. Students receive solo and/or dual flight hour instruction as part of the private pilot SEL certification using FAA-approved Part 141 flight training syllabus (Lab).

**AVN 193A. Private Pilot- SEL: Flight II. (1 Credit)**

A. Prerequisite: Dept. approval (i.e. students must make satisfactory flight progress, as determined by the Aviation Coordinator, before being allowed to register into subsequent AVN flight labs). Student will receive remaining flight hours leading to FAA private pilot SEL certification using FAA-approved Part 141 flight training syllabus.

**AVN 194A. Private Pilot: Flight. (1 Credit)**

A. Prerequisite or Corequisite: AVN 192 with a grade of "C" or better, and an overall GPA of 2.0. This course consists of the dual and solo flight hours and experiences required for the private pilot certification with the Federal Aviation Administration.

**AVN 195. Pvt Pilot-Heli:Grnd(R-22/R-44). (4 Credits)**

A. Prerequisite: Math ACT of 22 or higher or place in math placement test at Math 098 or higher with "C" grade or higher. Provides aeronautical knowledge and 5 hours flight simulation necessary to prepare student pilots to successfully complete FAA Private Pilot-Helicopter written examination.

**AVN 195A. Pvt Pilot-Heli: Flight I(R-22). (1 Credit)**

A. Prerequisite or Co-requisite: AVN 195 with "B" grade or better and overall 2.0 GPA. First Robinson 22 Helicopter flight lab for pilots weighing less than 185 pounds leading to FAA private pilot helicopter certification using FAA-approved Part 141 flight training syllabus (Lab).

**AVN 196A. Pvt Plt-Heli:Flight II(R-22). (1 Credit)**

(1) A. Prerequisite: AVN 195A with "S" grade and overall 2.0 GPA. Second Robinson 22 Helicopter flight lab for pilots weighing less than 185 pounds leading to FAA private pilot helicopter certification using FAA-approved Part 141 flight training syllabus (Lab).

**AVN 197A. Pvt Plt-Heli:Flight III(R-22). (1 Credit)**

(1) A. Prerequisite: AVN 196A with "S" grade and overall 2.0 GPA. Third Robinson 22 Helicopter flight lab for pilots weighing less than 185 pounds leading to FAA private pilot helicopter certification using FAA-approved Part 141 flight training syllabus (Lab).

**AVN 198A. Pvt Plt-Heli:Flight I(R-44). (1 Credit)**

(1) A. Prerequisite; corequisite: AVN 195 with "B" grade or better and overall 2.0 GPA. First Robinson 44 Helicopter flight lab for pilots weighing more than 185 pounds leading to FAA private pilot helicopter certification using FAA-approved Part 141 flight training syllabus (Lab).

**AVN 199A. Pvt Plt-Heli:Flight II(R-44). (1 Credit)**

(1) A. Prerequisite: AVN 198A with "S" grade and overall 2.0 GPA. Second Robinson 44 Helicopter flight lab for pilots weighing more than 185 pounds leading to FAA private pilot helicopter certification using FAA-approved Part 141 flight training syllabus (Lab).

**AVN 200A. Pvt Plt-Heli:Flight III(R-44). (1 Credit)**

(1) A. Prerequisite: AVN 199A with "S" grade and overall 2.0 GPA. Third Robinson 44 Helicopter flight lab for pilots weighing more than 185 pounds leading to FAA private pilot helicopter certification using FAA-approved Part 141 flight training syllabus (Lab).

**AVN 205A. Inter Supervised Flight I. (1 Credit)**

A. Prerequisites: departmental approval and an overall GPA of 2.0. This course is designed to permit students holding the private pilot license to acquire additional supervised flight time. This course includes approximately 24 flight hours.

**AVN 206A. Inter Supervised Flight II. (1 Credit)**

A. Prerequisites: departmental approval and an overall GPA of 2.0. This course is designed to permit students holding the private pilot license to acquire additional supervised flight time. This course includes approximately 24 flight hours.

**AVN 220. Instrument Pilot: Ground. (4 Credits)**

A. Prerequisites: AVN 161A or AVN 192A and an overall 2.0 GPA. Provides aeronautical knowledge necessary to prepare student pilots to successfully complete the FAA Instrument Pilot written examination. 3 Lec/2 Lab.

**AVN 220A. Instrument Pilot: Flight. (1 Credit)**

A. Prerequisites: departmental approval and an overall GPA of 2.0. A course designed to permit the student to gain instrument flight training.

**AVN 221A. Instrument Pilot: Flight I. (1 Credit)**

A. Prerequisite: Dept. approval (i.e. students must make satisfactory flight progress, as determined by the Aviation Coordinator, before being allowed to register into subsequent AVN flight labs.). Students receive flight and simulator hours leading to the FAA instrument pilot certification using FAA-approved Part 141 flight training syllabus.

**AVN 222A. Instrument Pilot: Flight II. (1 Credit)**

A. Prerequisite: Dept. approval (i.e. students must make satisfactory flight progress, as determined by the Aviation Coordinator, before being allowed to register into subsequent AVN flight labs). Students receive remaining flight hours leading to the FAA instrument pilot certification using FAA-approved Part 141 flight training syllabus.

**AVN 225. Instrument Pilot-Heli: Ground. (4 Credits)**

A. Prerequisite: AVN 197A or 200A with "S" grade and overall 2.0 GPA. Provides aeronautical knowledge and 20 hours flight simulation necessary to prepare student pilots to successfully complete the FAA Instrument Helicopter Pilot written examination. 3 Lec/2 Lab.

**AVN 225A. Instrmnt Pilot: Heli Flight I. (1 Credit)**

(1) A. Prerequisite or corequisite: AVN 225 with "B" grade or better, prerequisite 197A or AVN 200A with "S" grade, and overall 2.0 GPA. First Robinson R-44 flight lab leading to the FAA instrument helicopter pilot certification using FAA-approved Part 141 flight training syllabus.

**AVN 226A. Instrmnt Pilot: Heli Flight II. (1 Credit)**

(1) A. Prerequisite: AVN 225A with "S" grade, and overall 2.0 GPA. Second Robinson R-44 helicopter flight lab leading to the FAA instrument helicopter pilot certification using FAA-approved Part 141 flight training syllabus.

**AVN 229A. Advanced Supervised Flight I. (1 Credit)**

A. Prerequisites: departmental approval and an overall GPA of 2.0. This course is designed to provide students flight training and experience for FAA Commercial Pilot License.

**AVN 230A. Advanced Supervised Flight II. (1 Credit)**

A. Prerequisites: departmental approval and an overall GPA of 2.0. This course is designed to provide students flight training and experience for FAA Commercial Pilot License.

**AVN 231A. Instrument Pilot- MEL: Flight I. (1 Credit)**

A. Prerequisite: Dept. approval (i.e. students must make satisfactory flight progress, as determined by the Aviation Coordinator, before being allowed to register into subsequent AVN flight labs). Student receives MEL flight hours leading to the FAA instrument pilot certification using FAA-approved Part 141 flight training syllabus.

**AVN 232A. Instrument Pilot- MEL: Flight II. (1 Credit)**

A. Prerequisite: Dept. approval (i.e. students must make satisfactory flight progress, as determined by the Aviation Coordinator, before being allowed to register into subsequent AVN flight labs). Student receives remaining MEL flight hours leading to the FAA instrument pilot certification using FAA-approved Part 141 flight training syllabus.

**AVN 250. Air Transportation. (3 Credits)**

A. Prerequisite AVN 150. A survey of the historical development of the air transportation system covering facilities, impact of regulations, problems encountered, and future requirements. Formerly AVN 350.

**AVN 280. Glass Cockpit Technology. (1 Credit)**

A. Prerequisite: AVN 220. Course provides instruction in operation of the Garmin G1000 glass cockpit to prepare students for operation of a G1000-equipped airplane in the Commercial Pilot Syllabus. Course includes 3 hours in a Garmin G1000 training device.

**AVN 290. UAS Flight Operations. (3 Credits)**

This course covers the techniques and best practices required to safely and successfully utilize and operate drones for commercial purposes. Every aspect of flight operation is covered, from equipment, preflight planning and legal compliance to operational procedures, flight training, and data collection. Students work through the entire mission cycle, starting with legal compliance, planning, and then pre and post flight operations. Students will gain hands-on experience using the drone flight simulators in the Drone Lab. In-class simulation training is to prepare them for an outdoor real flight experience.

**AVN 300. Commercial Pilot: Ground. (2 Credits)**

A. Prerequisites: AVN 221A. Provides aeronautical knowledge to prepare student pilots to successfully complete FAA Commercial Pilot written examination.

**AVN 300A. Commercial Pilot: Flight. (1 Credit)**

A. Dept. approval (i.e. students must make satisfactory flight progress, as determined by the Aviation Coordinator, before being allowed to register into subsequent AVN flight labs). The course consists of all or part of the dual and solo flight hours required for FAA commercial pilot certification.

**AVN 301A. Commercial Pilot- SEL: Flight I. (2 Credits)**

A. Prerequisite: Dept. approval (i.e. students must make satisfactory flight progress, as determined by the Aviation Coordinator, before being allowed to register into subsequent AVN flight labs). Student will receive 32 dual and solo flight hours as part of the curriculum leading to the FAA commercial pilot SEL certification using FAA-approved Part 141 flight training syllabus.

**AVN 302A. Commercial Pilot- SEL: Flight II. (1 Credit)**

A. Prerequisite: Dept. approval (i.e. students must make satisfactory flight progress, as determined by the Aviation Coordinator, before being allowed to register into subsequent AVN flight labs). Student will receive additional dual and solo flight hours as part of the FAA commercial pilot SEL certification using FAA-approved Part 141 flight training syllabus.

**AVN 303A. Commercial Pilot- SEL: Flight III. (1 Credit)**

A. Dept. approval (i.e. students must make satisfactory flight progress, as determined by the Aviation Coordinator, before being allowed to register into subsequent AVN flight labs.) Student will fly additional dual and solo flight hours as part of the FAA commercial pilot SEL certification using FAA-approved Part 141 flight training syllabus.

**AVN 304A. Commercial Pilot- SEL: Flight IV. (2 Credits)**

A. Prerequisite: Dept. approval (i.e. students must make satisfactory flight progress, as determined by the Aviation Coordinator, before being allowed to register into subsequent AVN flight labs). Student will fly remaining dual and solo hours flight hours as part of the curriculum leading to the FAA commercial pilot SEL certification using FAA-approved Part 141 flight training syllabus.

**AVN 305. Multi- Engine Pilot (MEL): Ground. (1 Credit)**

A. Prerequisite: AVN 301A. Provides multi-engine aeronautical knowledge to facilitate successful completion of multi-engine practical examination.

**AVN 305A. Multi- Engine: Flight. (1 Credit)**

A. Prerequisite: AVN 304A. Student will complete the multi-engine land (MEL) flight training required to earn the FAA (MEL) pilot certification.

**AVN 310. UAS Ground/Flight Operations. (3 Credits)**

This course instructs the student in the mission planning, preflight, ground control, mission execution, and data analysis of UAS specific missions such as, Agriculture, Power/Wind Turbine/Railroad/Pipeline Inspections, Infrastructure Security, and other mission types as required.

**AVN 310A. Flight Training Techniques I. (1 Credit)**

A. Prerequisites: Dept. approval (i.e. students must make satisfactory flight progress, as determined by the Aviation Coordinator, before being allowed to register into subsequent AVN flight labs). Flight training to prepare students for FAA examinations.

**AVN 312. UAS Commercial Single/Multi En. (3 Credits)**

This course instructs the student in the mission planning, preflight, ground control, mission execution, and data analysis of UAS specific missions such as, Search & Rescue, Geosciences, Environmental, Anti-Poaching, Homeland Security, Videography, Construction, and Surveying.

**AVN 315. Aviation Safety Programs. (3 Credits)**

I, II. A. Prerequisite: AVN 150. A presentation of factors, procedures, and aircraft accident investigation case studies relating to aviation safety, including risk management assessment, hazard identification analysis, safety programs-development-called Safety Management Systems (SMS) by the Federal Aviation Administration, and evaluation of outcomes.

**AVN 320. Flight Training Analysis II. (2 Credits)**

A. Prerequisite: appropriate flight credentials. A study of aeronautical information and instructional background necessary for becoming instrument flight instructors. Included in the course is teaching methodology, instrument interpretations, and instrument flight procedures.

**AVN 320A. Flight Training Techniques II. (1 Credit)**

A. Prerequisites: Dept. approval (i.e. students must make satisfactory flight progress, as determined by the Aviation Coordinator, before being allowed to register into subsequent AVN flight labs). Flight training to prepare students for FAA examinations.

**AVN 325. Aircraft Systems. (3 Credits)**

I,II. Prerequisite AVN 150. A study of electrical, mechanical and hydraulic systems, design and performance standards, capabilities and limitations, and conformance to FAA specifications.

**AVN 329. Aviation Human Factors. (3 Credits)**

A Prerequisites: AVN 315. ENG 102 or 102R, 105(B), or HON 102. A study of human factors that affect and influence behavior, with application to aviation safety and its connection to all disciplines within the aviation industry.

**AVN 329W. Aviation Human Factors. (3 Credits)**

(3) A Prerequisites: AVN 315. ENG 102 or 102R, 105(B), or HON 102. A study of human factors that affect and influence behavior, with application to aviation safety and its connection to all disciplines within the aviation industry.

**AVN 330. Crew Resource Management. (3 Credits)**

(3) A. Prerequisite: AVN 315 and 329W. A survey of crew resource management history and development in commercial aviation with emphasis on the myriad factors that influence crew interaction and performance.

**AVN 331A. Commercial Pilot- MEL: Flight I. (1 Credit)**

A. Prerequisite: Dept. approval (i.e. students must make satisfactory flight progress, as determined by the Aviation Coordinator, before being allowed to register into subsequent AVN flight labs). Student receives initial dual flight hours as part of the FAA commercial pilot MEL certification using FAA-approved Part 141 flight training syllabus.

**AVN 332A. Commercial Pilot- MEL: Flight II. (1 Credit)**

A. Prerequisite: Dept. approval (i.e. students must make satisfactory flight progress, as determined by the Aviation Coordinator, before being allowed to register into subsequent AVN flight labs). Student CRM time building flight hours leading to the FAA commercial pilot MEL certification using FAA-approved Part 141 flight training syllabus.

**AVN 333A. Commercial Pilot- MEL: Flight III. (1 Credit)**

A. Prerequisite: Dept. approval (i.e. students must make satisfactory flight progress, as determined by the Aviation Coordinator, before being allowed to register into subsequent AVN flight labs). Student CRM time building flight hours leading to the FAA commercial pilot MEL certification using FAA-approved Part 141 flight training syllabus.

**AVN 334A. Commercial Pilot- MEL: Flight IV. (1 Credit)**

A. Prerequisite: Dept. approval (i.e. students must make satisfactory flight progress, as determined by the Aviation Coordinator, before being allowed to register into subsequent AVN flight labs). Student CRM time building flight hours and ten PDPIC dual flight hours leading to the FAA commercial pilot MEL certification using FAA-approved Part 141 flight training syllabus.

**AVN 335. Weather Reporting/Analysis. (3 Credits)**

I, II. Prerequisite: PHY 101 or higher. A comprehensive analysis of weather conditions and patterns as they apply to flight.

**AVN 340. Airport Management I: Operations and Security. (3 Credits)**

I, II. Prerequisite AVN 150. An in-depth overview of airport operational issues, unmanned systems integration, air traffic control issues, safety, security, and planning.

**AVN 341. Airport Management II: Planning and Administration. (3 Credits)**

(3). I, II. Prerequisite AVN 340. An in-depth overview of airport administration, finance, marketing, airfield design, planning, construction, air service development, and community relations.

**AVN 349. Cooperative Study: Aviation. (0.5-8 Credits)**

A. Prerequisite: coordinator approval. Work under faculty and field supervisors in placements related to academic studies. One to eight hours credit per semester or summer. A minimum of 80 hours work required for each academic credit.

**AVN 350. Air Transportation. (3 Credits)**

A. A survey of the historical development of the air transportation system covering facilities, impact of regulations, problems encountered, and future requirements.

**AVN 360. General Aviation Management. (3 Credits)**

I, II. Prerequisite AVN 150. Designed to provide students with an understanding of an airport Fixed Base Operator's role and also of Aviation Service Businesses in the aviation industry, to include managerial and operational problems.

**AVN 370. Aviation Supervision and Leadership. (3 Credits)**

I, II. Prerequisite: AVN 150. A study of effective supervisory and leadership techniques, with application to practical situations in the aviation industry.

**AVN 390. Aviation Decision Making. (3 Credits)**

A. Prerequisite AVN 150. A study of decision theory and its application to aviation decision-making and problem solving.

**AVN 399. Aviation Prof Skills Seminar. (0 Credits)**

I, II. Required of all Aviation students who have earned at least 60 hours. Credit (CR) will be given when students have attended and/or completed department-sponsored activities regarding professional skills and careers.

**AVN 400. Multi-Engine Pilot: Ground. (1 Credit)**

A. Prerequisite: appropriate flight credentials. The course is designed to provide appropriate aeronautical knowledge about multi-engine aircraft to facilitate successful completion of the multi-engine flight component.

**AVN 400A. Multi-Engine Pilot: Flight. (1 Credit)**

A. Prerequisites: Dept. approval (i.e. students must make satisfactory flight progress, as determined by the Aviation Coordinator, before being allowed to register into subsequent AVN flight labs). A one hour laboratory course integrated with AVN 400 consisting of the dual and solo flight hours required for FAA certification.

**AVN 401. Airline Management. (3 Credits)**

A. Prerequisite: AVN 250 or AVN 350 and junior standing (at least 60 hours). Acquaint student with the development, administrative and operational factors peculiar to FAR Part 121 Airline Operations. Emphasis is placed on proper market analysis, financial matters, the company plan, aircraft selection, aircraft acquisition, route structure, timetable and pertinent regulatory requirements.

**AVN 402. Corporate and Business Aviation. (3 Credits)**

A. Prerequisite AVN 250 or 350 and junior standing (at least 60 hours). The study of the operation of a corporate flight department. Course includes the value of management mobility, aircraft and equipment evaluation, maintenance, flight operations, administration and fiscal considerations.

**AVN 410. Air Traffic Control. (3 Credits)**

I, II. Prerequisite AVN 250 or 350 and junior standing (at least 60 hours). A study of the national air traffic control system with emphasis on basic air traffic control procedures; the role of centers, approach control, towers, and flight service centers; communications; navigation procedures, radar operations, facilities.

**AVN 412. Counter UAS Operations. (3 Credits)**

Course is designed to educate and explore the emerging threat of unmanned aircraft systems to the nation's airspace and infrastructure. This course will be divided into four sections (overview, detect, identify and defeat), to cover all current and future lines of effort in a unified approach to counter UAS.

**AVN 415. Instructor Pilot- SEL: Ground. (3 Credits)**

A. Prerequisite: AVN 161, AVN 220, and AVN 300 with "C" grade or better and overall 2.0 GPA. Prepares student pilots for the FAA Certified Flight Instructor (CFI) & Fundamentals of Instruction (FOI) written exams.

**AVN 415A. Instructor Pilot- SEL: Flight. (1 Credit)**

A. Prerequisite: AVN 304A with "S" grade. Prerequisite or corequisite: AVN 415 with "C" or higher, and overall 2.0 GPA. Fifteen dual flight hours and 5 hours flight simulation leading to the FAA instructor pilot (SEL) certification using FAA-approved Part 141 flight training syllabus.

**AVN 416A. Instructor and Commercial Pilot- SEL: Flight. (1 Credit)**

A. Prerequisite: Dept. approval (i.e. students must make satisfactory flight progress, as determined by the Aviation Coordinator, before being allowed to register into subsequent AVN flight labs). Student will receive dual flight hours and simulation hours leading to the FAA Instructor Pilot (IP) SEL and Commercial Pilot-SEL certifications using FAA-approved Part 141 flight training syllabus.

**AVN 420. Flight Training Analysis III. (2 Credits)**

A. Prerequisite: appropriate flight credentials. Principles and methodology of teaching multi-engine flight and includes ground instruction required by the FAA in preparation for a flight instructor multi-engine rating.

**AVN 420A. Flight Training Techniques III. (1 Credit)**

A. Prerequisites: Dept. approval (i.e. students must make satisfactory flight progress, as determined by the Aviation Coordinator, before being allowed to register into subsequent AVN flight labs). Flight preparation for FAA CFI Multi-Engine flight test.

**AVN 421. Instrument and Multi-Engine IP: Ground. (2 Credits)**

A. Prerequisite: AVN 415 with "C" grade or better and overall 2.0 GPA or an Instructor Pilot-SEL rating. Provides study of aeronautical information for becoming instrument and multi-engine flight instructor, and preparation for FAA Instrument Instructor written.

**AVN 421A. Instrument and Multi-Engine IP: Flight. (1 Credit)**

A. Prerequisite Dept. approval (i.e. students must make satisfactory flight progress, as determined by the Aviation Coordinator, before being allowed to register into subsequent AVN flight labs). Student will receive required flight hours and simulation hours leading to the FAA Instrument Instructor Pilot (IP) SEL rating using FAA-approved Part 141 flight training syllabus.

**AVN 422A. Commercial and Instructor Pilot-MEL: Flight. (1 Credit)**

A. Prerequisite: Dept. approval (i.e. students must make satisfactory flight progress, as determined by the Aviation Coordinator, before being allowed to register into subsequent AVN flight labs). Student will receive required dual flight hours and simulation hours leading to the FAA commercial multi-engine add-on and multi-engine instructor ratings using FAA-approved Part 141 flight training syllabus.

**AVN 423A. Instructor Pilot--Multi-Engine: Flight. (1 Credit)**

A. Prerequisite: Dept. approval (i.e. students must make satisfactory flight progress, as determined by the Aviation Coordinator, before being allowed to register into subsequent AVN flight labs). Student will receive additional dual flight hours and simulation hours leading to the FAA Multi-Engine instructor rating using FAA-approved Part 141 flight training syllabus.

**AVN 425. Applied Aerodynamics. (3 Credits)**

A. Prerequisite: PHY 101. Applied theories of flight and flight factors, including a study of the principles of performance, stability and control, and operational data.

**AVN 435. Turbine Aircraft Systems. (3 Credits)**

A. Prerequisite: AVN 325 with a "C" or better or instructor approval. A study of the functioning theory and integral components of gas turbine (jet) engines. Additionally, provides a study of electrical, mechanical and hydraulic systems as they relate to turbine engine aircraft.

**AVN 460. Aviation Law. (3 Credits)**

I, II. Prerequisite: AVN 250 or 350 and junior standing (at least 60 hours). A study of civil law as it pertains to aviation and includes the historic development of United States and international aviation law while surveying governmental responsibility for aviation accidents.



**AVN 467. Comprehensive Exam for BS in Aviation. (0 Credits)**

(0) A. Prerequisite: Consent of Advisor. Registration in AVN 467 is required of all undergraduate B.S. (Aviation) students for the term in which they wish to take their comprehensive examination, including the exit exam and advisor approved certification or license.

**AVN 470. National Air Space System. (3 Credits)**

A. An overview of the National Air Space System with emphasis on problems of implementation, safety considerations, and social/economic impact.

**AVN 480. Glass Flight Deck Technologies. (1 Credit)**

(1) A. Prerequisite: AVN 222A or AVN 232A and AVN 330. Provides an integrated approach to the theory, technology, and operations of "Glass" flight deck technologies to prepare student pilots to successfully operate "glass" flight deck aircraft. Course includes 5 hours in "Glass" capable AATD flight simulator.

**AVN 490. Airline Flight Operations. (3 Credits)**

A. Prerequisite(s): AVN 330, 435, and 480. Provides an academic and AATD flight simulation-based transition from the general aviation reciprocal engine flight operations at 130 KIAS to airline turbojet flight operations at 350 KIAS or faster. Actual airline flight operations, to include flight deck flows and checklist usage will be introduced. Student pilots will fly 10 hours of AATD jet transition flight simulation as a 2 person crew. 2 Lec/2 lab.

**AVN 495. Internship. (1-3 Credits)**

Prerequisite: departmental approval. Students will work under departmental supervision in a private or public agency engaged in aviation activities.

**AVN 498. Independent Study. (1-3 Credits)**

A. Prerequisite: AVN major with senior standing. Student must have the independent study proposal form approved by faculty supervisor and program coordinator prior to enrollment. May be retaken to a maximum of six hours.

**AVN 499. Aviation Careers Seminar. (0 Credits)**

II. Prerequisite: AVN 399 or BTS 300. Required of all Aviation students who have earned at least 90 hours. Credit (CR) will be given when students have attended the annual Aviation Career Day and completed all related assignments.

**Career and Technical Education****CTE 164. Orientation to Career and Technical Education. (3 Credits)**

A. Instruction to new technical teachers in areas of principles of instruction, lesson planning, oral instruction, instructional media, demonstrations, evaluation and follow-up. Satisfactory-unsatisfactory grading.

**CTE 204. Related Sci Math & Tech: Occ I. (3 Credits)**

Offered only through written examination; applicant must be eligible for vocational/technical teaching certificate.

**CTE 205. Manipulative Skills: Occ I. (3 Credits)**

A. Offered only through technical competence examination; applicant must be eligible for vocational/technical teaching certificate.

**CTE 206. Related Knowledge: Occ I. (3 Credits)**

A. Offered only through written examination; applicant must be eligible for vocational/technical teaching certificate.

**CTE 261. Foundations of Career and Technical Education. (3 Credits)**

A. For in-service career and technical teachers. A study of the historical, philosophical, economical, sociological, and psychological foundations of career and technical education related to elementary, secondary, and post-secondary education. Credit will not be awarded for both CTE 261 and 262.

**CTE 262. Foundations of Career and Technical Education (Pre-Service). (3 Credits)**

A. Co-Requisite: EDF 310 (1)-Enrollment in a late term section is preferred. For pre-service career and technical teachers. A study of the historical, philosophical, economical, sociological, and psychological foundations of career and technical education related to elementary, secondary, and post-secondary education. Credit will not be awarded for both CTE 262 and 261.

**CTE 302. New Developments in Industry. (1-6 Credits)**

A. Concurrent enrollment in approved industry sponsored course. One hour credit for each week of enrollment (minimum of 20 class hours per week). Student required to present proof of completion and to develop a teaching unit on the new development. May be retaken provided the industry sponsored school is different. Graded on a satisfactory-unsatisfactory basis. Only in-service vocational education teachers may enroll.

**CTE 303. Career and Technical Education Staff Exchange. (2-9 Credits)**

A. Prerequisite: departmental approval. For in-service career and technical teachers enrolled in an approved staff exchange program designed to update technical skills and knowledge in an occupational setting. Assignments include verifying contact hours, site visit, narrative summary, and lesson development. First week of exchange is equal to two semester hours of credit with one additional hour of credit for each additional week. Satisfactory-unsatisfactory grading.

**CTE 304. Rel Sci Math & Tech in Occ. (3 Credits)**

A. Offered only through written examination; applicant must be eligible for vocational/technical teaching certificate.

**CTE 305. Manipul Skills Occupation II. (3 Credits)**

A. Offered only through technical competence examination; applicant must be eligible for vocational/ technical teaching certificate.

**CTE 306. Related Knowledge: Occ II. (3 Credits)**

A. Offered only through written examinations; applicant must be eligible for vocational/technical teaching certificate.

**CTE 361. Course Materials in Career and Technical Education. (3 Credits)**

A. The preparation of instructional materials and instructional techniques, including the development and use of instructional media. The content will include the development of curricula at appropriate levels of education and appropriate laboratory activities.

**CTE 363. Evaluation in Career and Technical Education. (3 Credits)**

A. Methods of evaluation, preparation of measuring devices; methods of assessing technical competency; interpretation of standardized test results; statistical analysis of test data and the improvement of instruction.

**CTE 364. Methods in Career and Technical Education. (3 Credits)**

A. Presentation and application of instructional materials, methods, techniques, and devices relevant to teaching technical subjects.

**CTE 463. Practicum in Career and Technical Education. (4-12 Credits)**

A. Prerequisites: CTE 361, 363, 364. Observation, participation and supervised teaching in vocational and technical education. Includes experiences in lesson planning, classroom management, record keeping, development and use of instructional materials and directed teaching in approved centers. Students are graded on a satisfactory-unsatisfactory basis.

**Construction Management****CON 121. Introduction to Construction. (3 Credits)**

I, II. A survey of the construction industry. Nature, scope, and general characteristics of the industry with an emphasis on careers, safety, and typical contracting methods.

**CON 201. Materials and Methods of Construction. (3 Credits)**

I, II. Composition, manufacture and grades of construction materials and building products with emphasis on wood, metal, glass, roofing, finishing, and plastic materials. Methods, including safety, involved in the placement and installation of these materials.

**CON 202. Materials and Methods of Construction II. (3 Credits)**

II. Composition, manufacture, and grades of construction materials and building products with an emphasis on concrete and masonry. Methods, including safety, involved in the placement and installation of these materials. 2 Lec/2 Lab.

**CON 221. Plane Surveying. (3 Credits)**

I, II. Prerequisite: MAT 120 with a minimum grade of "C". Principles of surveying, including the measurement of distances, elevations, and angles. Calculations for the various operations, including traverse computations. Introduction to the use of surveying instruments and note keeping. 2 Lec/2 Lab.

**CON 250. Structural Systems & Material. (3 Credits)**

I. Prerequisite: DES 122. Emphasis on building systems and materials for residential structures. An understanding of the properties of structural materials and their appropriate applications. Laws, codes, and standards will be addressed along with instruction in blueprint reading.

**CON 294. Construction Graphics. (3 Credits)**

A. Basic principles of residential and small commercial planning; styles of architecture; a comparative study of structural systems and the preparation of working drawings. 2 Lec/2 Lab.

**CON 303. Statics and Strength of Materials. (3 Credits)**

I, II. Prerequisites: MAT 120 or 234 (4) with a minimum grade of "C", and PHY 131 or 201. Study of loads, forces and their effects on rigid bodies and structures at rest. Computation of equilibrium reactions, internal forces, shear, moments, couples, friction, stress, strain, and deformation. Finding centroids and moments of inertia.

**CON 307. Soils and Foundations. (3 Credits)**

I. Prerequisite: CON 303. A study of soil mechanics as it relates to foundation construction. Topics include soil classification, engineering properties, compaction testing, types of foundation systems, and methods of foundation construction.

**CON 320. Construction Surveying. (3 Credits)**

I, II. Prerequisite: CON 221. The application of surveying skills as they relate to horizontal and vertical control on construction projects. Activities include building layout, centerline staking, earthwork computations, and slope staking. The use of electronic instruments is emphasized. 2 Lec/2 Lab.

**CON 321. Boundary Surveying. (3 Credits)**

I. Prerequisite: CON 221. This course introduces students to the principles of boundary surveying and provides them with the basic knowledge and skill to practice boundary surveying under the supervision of a registered professional surveyor.

**CON 322. Construction Structural Design. (3 Credits)**

I, II. Prerequisites: CON 303 and MAT 211 or MAT 234 and MAT 217. A study of the design of beams and columns using steel and wood. Principles of structural design related to the design of temporary structures used in the construction process.

**CON 323. Estimating I. (3 Credits)**

I, II. Prerequisites: CON 201, 202 and MAT 120 with a grade of "C". A study of the materials and labor required in the construction of commercial projects. Experience is gained in reading drawings, calculating material quantities, and listing work items in a standardized format. 2 Lec/2 Lab.

**CON 324. Mechanical/Electrical Systems. (3 Credits)**

II. Prerequisites: CON 201 and 21 additional hours of CON courses. A study of plumbing, heating, air-conditioning, electrical power distribution, and lighting for vertical and horizontal construction. Basic fundamentals of water supply, waste drainage, electrical circuits, and heat loss/gain calculations are studied. 2 Lec/2 Lab.

**CON 325. Construction Estimating. (4 Credits)**

(5) I, II. Prerequisite: CON 201, 202; MAT 120 with a minimum grade of "C"; and TEC 161. A study of estimating construction materials, equipment, labor, and costs, through reading drawings and calculating quantities and costs. Estimating software and cost databases are utilized to list work items in standardized format. 4 Lec/2 Lab.

**CON 326. Horizontal Construction. (3 Credits)**

(3) A. A study of construction equipment, roadwork, bridge construction and various other topics involved in horizontal construction means and methods.

**CON 349. Applied Learning in Construction Management. (0.5-8 Credits)**

A. Prerequisites: 30 hours of credit including 9 credit hours of CON courses with a 2.0 GPA and departmental approval. Transfer students must have completed at least one semester of full-time work at EKU. Work under faculty and field supervisors in placements related to construction management.

**CON 401. Spec Prob in Constr Tech. (1-3 Credits)**

A. An independent study course for exceptional upper division undergraduate students. A study proposal will be developed by the student and approved by the faculty supervisor and department chair prior to enrollment. May be retaken provided the topic of study is different.

**CON 420. Engineering Economy. (3 Credits)**

I, II. Junior Class Restriction. A systematic application of engineering economy to design, selection of construction materials, and construction methods. A study of first costs, operating and maintenance costs, service life, and replacement costs.

**CON 421. Construction Contracts. (3 Credits)**

I. Prerequisite: CON 325. Contract documents, drawings, and specifications and their impact on the construction process. A study of the types and organization of construction contracts, and the roles and responsibilities of the parties involved.

**CON 423. Estimating II. (3 Credits)**

I, II. Prerequisite: CON 323 and TEC 161. Construction projects of moderate complexity are divided by scope, then materials are quantified and costed. Cost databases are utilized for estimating labor, materials, equipment, and overhead. Emphasis is placed on the use of estimating software. 2 Lec/2 Lab.

**CON 425. Project Organization and Supervision. (3 Credits)**

II. Prerequisites: MGT 300 or MGT 301 or INT 408 or AEM 408 and CON 421. A study of principles of construction project administration, systems for efficient operation of office and field personnel, and dispute avoidance and resolution procedures. The construction process is followed from project inception to closeout.

**CON 426. Scheduling. (3 Credits)**

I, II. Prerequisites: ACC 201 or FIN 310 and CON 325. A study of the planning and control of construction activities and project costing. Topics include critical path method scheduling, metric based progress monitoring, cash flow analysis, and cost control. Standard scheduling software is used. 2 Lec/2 Lab.

**CON 428. Construction Sustainability. (3 Credits)**

(3) A. A study focused on understanding the concept of sustainability in construction, which uses the requirements and procedures for obtaining Leadership in Energy and Environmental Design (LEED) professional accreditation.

**CON 480. Construction Management Graduate Preparation. (1-6 Credits)**

Prerequisite: Admission to MS program in Applied Engineering and Technology Management, Construction Management concentration, and departmental approval. A guided study of construction management modules meant for graduate students who have an undergraduate degree in an unrelated field but who have a minimum of 3 years of verifiable construction experience.

**CON 499. Construction Mgt. Capstone. (4 Credits)**

(4) II. Co-requisites and/or prerequisites: CON 425, CON426. A project-based capstone course for senior-level construction management students under the direction of the construction management faculty. This course integrates applied components of undergraduate construction courses and incorporates online environmental and safety certifications. 3 Lec/2 Lab.

**Electricity/Electronics****EET 251. Electricity and Electronics. (3 Credits)**

I, II. Prerequisite: Grade of at least "C" in MAT 095 or a minimum math ACT score of 18 or a minimum SAT math score of 490. Principles of basic electricity, circuit operation, and electronics. Topics include electrical components, measurements, power, characteristics of AC-DC, basic circuit laws, circuit simulation, magnetism, energy conversion, and sources. 2 Lec/2 Lab.

**EET 252. Digital Electronics. (3 Credits)**

I, II. Prerequisite: grade of at least "C" in MAT 090 or equivalent. A survey of digital electronics fundamentals and applications. Topics include number systems, digital mathematics, logic families, logic gates, multiplexers, demultiplexers, comparators, counters, decoders, displays, and converters. 2 Lec/2 Lab.

**EET 253. Microprocessor Control Systems. (3 Credits)**

A. Prerequisite: EET 251 and 252. The operation and application of microprocessor-based control systems in electro-mechanical project environments. Topics include data, address, and control signals; memory software; interfacing digital and analog devices; ports; and data communications. 2 Lec/2 Lab.

**EET 254. Machine Language/Microcontrol. (3 Credits)**

A. Prerequisite/Corequisite: EET 252. Machine language programming for ROM based microprocessor based industrial controllers. Emphasis on software manipulation of I/O control devices in real-time, interrupt driven, process control environments. 2 Lec/2 Lab.

**EET 257. Electronic Devices and Circuits. (3 Credits)**

A. Prerequisite: EET 251. An analysis of the characteristics of solid state devices and the common circuits that utilize these devices. Emphasis on problem solving supplemented by laboratory activities and demonstration of electronic circuits and devices. 2 Lec/2 Lab.

**EET 349. Co-op or Appl Lrn: CET/CEN. (1-8 Credits)**

II. Prerequisite: departmental approval, sophomore (30-59 hours) or higher standing and minimum of 2.0 GPA. Work under faculty and field supervisors in placements related to academic studies in Computer Electronics Technology (CET) or Computer Electronic Networking (CEN). Transfer students must have completed at least 12 hours of coursework at EKU. A minimum of 80 hours work required for each academic credit.

**EET 350. Industrial Electronics I. (3 Credits)**

A. Prerequisite: EET 257. Principles of timing, power control circuitry, transducers, and programmable controllers in commercial and industrial applications. 2 Lec/2 Lab.

**EET 351. Programmable Logic Controllers. (3 Credits)**

A. Prerequisite: EET 251 or 252. The study of programmable logic controllers (PLCs). PLC functioning theory, selection, wiring, and programming. 2 Lec/2 Lab.

**EET 452. Electrical Power & Drives. (3 Credits)**

A. Prerequisites: EET 257; MAT 120 or higher and PHY 101. Principles of electromagnetic induction as applied to the generation, distribution, conversion, control, and measurement of electrical power. Analysis of the electronics used for electrical drives. Installation, programming and maintenance of digital drives. 2 Lec/2 Lab.

**Networking****NET 302. PC Troubleshooting & Construction. (3 Credits)**

I, II. Prerequisite: TEC 161 or (INF 104 or higher) or (CSC 140 or higher) or (CIS 212 or higher). Construction, operation and troubleshooting microprocessors, system memory, computer architecture, video types, monitors, hard drives, mice, cabling, notebook computers and printers modern operating systems, and application programs. Building computer systems to specific requirements. 2 Lec/2 Lab.

**NET 303. LANs & PC Communications. (3 Credits)**

I, II. Formerly EET 303. Prerequisite: TEC 161 or (INF 104 or higher) or (CSC 140 or higher) or (CIS 212 or higher) and (a grade of at least "C" in MAT 095 or a minimum math ACT score of 18 or a minimum SAT math score of 490). Installing, configuring, managing, and troubleshooting network and computer systems communications hardware and software. 2 Lec/2 Lab.

**NET 343. Network Switches & Routers. (3 Credits)**

A. Formerly EET 343. Prerequisite: NET 303 or EET 303 or CIS 375. Cisco internetworking, switching, IOS, routing, VLAN's, access lists, and WAN protocols are covered in a combination of lecture, demonstration, and laboratory. 2 Lec/2 Lab.

**NET 344. Advanced Network Devices. (3 Credits)**

A. Prerequisite: NET 343. Configure and troubleshoot network-aware devices/objects in small- to mid-sized LANs. Principles of network device/object startup, configuration and management, VLAN, advanced network communications and security. 2 Lec/2 Lab.

**NET 349. Applied Learning in NET. (0.5-8 Credits)**

I, II. Prerequisite: departmental approval, Sophomore (30-59 hours) or higher standing and minimum of 2.0 GPA. Work under faculty and field supervisors.

**NET 349A. Cooperative Study: CET/CEN. (0.5-8 Credits)**

I, II. Formerly EET 349 A-N. Prerequisite: departmental approval, sophomore (30-59 hours) or higher standing and minimum of 2.0 GPA. Work under faculty and field supervisors in placements related to academic studies. 1-8 credit hours semester. Transfer students must have completed at least 12 hours of coursework at ECU. Minimum 80 hours work required per credit hour.

**NET 349B. Cooperative Study: CET/CEN. (0.5-8 Credits)**

I, II. Formerly EET 349 A-N. Prerequisite: departmental approval, sophomore (30-59 hours) or higher standing and minimum of 2.0 GPA. Work under faculty and field supervisors in placements related to academic studies. 1-8 credit hours semester. Transfer students must have completed at least 12 hours of coursework at ECU. Minimum 80 hours work required per credit hour.

**NET 349C. Cooperative Study: CET/CEN. (0.5-8 Credits)**

I, II. Formerly EET 349 A-N. Prerequisite: departmental approval, sophomore (30-59 hours) or higher standing and minimum of 2.0 GPA. Work under faculty and field supervisors in placements related to academic studies. 1-8 credit hours semester. Transfer students must have completed at least 12 hours of coursework at ECU. Minimum 80 hours work required per credit hour.

**NET 349D. Cooperative Study: CET/CEN. (0.5-8 Credits)**

I, II. Formerly EET 349 A-N. Prerequisite: departmental approval, sophomore (30-59 hours) or higher standing and minimum of 2.0 GPA. Work under faculty and field supervisors in placements related to academic studies. 1-8 credit hours semester. Transfer students must have completed at least 12 hours of coursework at ECU. Minimum 80 hours work required per credit hour.

**NET 349E. Cooperative Study: CET/CEN. (0.5-8 Credits)**

I, II. Formerly EET 349 A-N. Prerequisite: departmental approval, sophomore (30-59 hours) or higher standing and minimum of 2.0 GPA. Work under faculty and field supervisors in placements related to academic studies. 1-8 credit hours semester. Transfer students must have completed at least 12 hours of coursework at ECU. Minimum 80 hours work required per credit hour.

**NET 349F. Cooperative Study: CET/CEN. (0.5-8 Credits)**

I, II. Formerly EET 349 A-N. Prerequisite: departmental approval, sophomore (30-59 hours) or higher standing and minimum of 2.0 GPA. Work under faculty and field supervisors in placements related to academic studies. 1-8 credit hours semester. Transfer students must have completed at least 12 hours of coursework at ECU. Minimum 80 hours work required per credit hour.

**NET 349G. Cooperative Study: CET/CEN. (0.5-8 Credits)**

I, II. Formerly EET 349 A-N. Prerequisite: departmental approval, sophomore (30-59 hours) or higher standing and minimum of 2.0 GPA. Work under faculty and field supervisors in placements related to academic studies. 1-8 credit hours semester. Transfer students must have completed at least 12 hours of coursework at ECU. Minimum 80 hours work required per credit hour.

**NET 349H. Cooperative Study: CET/CEN. (0.5-8 Credits)**

I, II. Formerly EET 349 A-N. Prerequisite: departmental approval, sophomore (30-59 hours) or higher standing and minimum of 2.0 GPA. Work under faculty and field supervisors in placements related to academic studies. 1-8 credit hours semester. Transfer students must have completed at least 12 hours of coursework at ECU. Minimum 80 hours work required per credit hour.

**NET 349I. Cooperative Study: CET/CEN. (0.5-8 Credits)**

I, II. Formerly EET 349 A-N. Prerequisite: departmental approval, sophomore (30-59 hours) or higher standing and minimum of 2.0 GPA. Work under faculty and field supervisors in placements related to academic studies. 1-8 credit hours semester. Transfer students must have completed at least 12 hours of coursework at ECU. Minimum 80 hours work required per credit hour.

**NET 349J. Cooperative Study: CET/CEN. (0.5-8 Credits)**

I, II. Formerly EET 349 A-N. Prerequisite: departmental approval, sophomore (30-59 hours) or higher standing and minimum of 2.0 GPA. Work under faculty and field supervisors in placements related to academic studies. 1-8 credit hours semester. Transfer students must have completed at least 12 hours of coursework at ECU. Minimum 80 hours work required per credit hour.

**NET 349K. Cooperative Study: CET/CEN. (0.5-8 Credits)**

I, II. Formerly EET 349 A-N. Prerequisite: departmental approval, sophomore (30-59 hours) or higher standing and minimum of 2.0 GPA. Work under faculty and field supervisors in placements related to academic studies. 1-8 credit hours semester. Transfer students must have completed at least 12 hours of coursework at ECU. Minimum 80 hours work required per credit hour.

**NET 349L. Cooperative Study: CET/CEN. (0.5-8 Credits)**

I, II. Formerly EET 349 A-N. Prerequisite: departmental approval, sophomore (30-59 hours) or higher standing and minimum of 2.0 GPA. Work under faculty and field supervisors in placements related to academic studies. 1-8 credit hours semester. Transfer students must have completed at least 12 hours of coursework at ECU. Minimum 80 hours work required per credit hour.

**NET 349M. Cooperative Study: CET/CEN. (0.5-8 Credits)**

I, II. Formerly EET 349 A-N. Prerequisite: departmental approval, sophomore (30-59 hours) or higher standing and minimum of 2.0 GPA. Work under faculty and field supervisors in placements related to academic studies. 1-8 credit hours semester. Transfer students must have completed at least 12 hours of coursework at ECU. Minimum 80 hours work required per credit hour.

**NET 349N. Cooperative Study: CET/CEN. (0.5-8 Credits)**

I, II. Formerly EET 349 A-N. Prerequisite: departmental approval, sophomore (30-59 hours) or higher standing and minimum of 2.0 GPA. Work under faculty and field supervisors in placements related to academic studies. 1-8 credit hours semester. Transfer students must have completed at least 12 hours of coursework at ECU. Minimum 80 hours work required per credit hour.

**NET 354. Microcomputer & Network Security. (3 Credits)**

I, II. Formerly EET 354. Prerequisite: NET 303 or EET 303 or CIS 375. Security considerations in computer systems and networks using appropriate hardware and software. Topics include malware, encryption, VPNs, ACLs, firewalls, Wi-Fi, and secure protocols. Testing configuring, managing and troubleshooting security in network systems. 2 Lec/2 Lab.

**NET 361. Cloud Technology Foundations. (3 Credits)**

A. Prerequisite: NET 303 or CIS 375. Cloud computing configurations and deployments. Definition, models, characteristics, testing, security, and management, business cases, and emerging technologies from the perspective of a cloud practitioner. Case studies of cloud computing across various industries. 2 Lec/2 Lab.

**NET 367A. Exit Exam for AAS in Tech, with Computer Electronics. (0 Credits)**

(0) A. Prerequisite: Consent of Advisor. Registration in NET 367A is required of all undergraduate A.A.S. students in the Technology program specializing in Computer Electronics program for the term in which they wish to take their comprehensive examination.

**NET 367B. Exit Exam for Minor in Computer Electronics Technology. (0 Credits)**

(0) A. Prerequisite: Consent of Advisor. Registration in NET 367B is required of all undergraduate students in the Minor for Computer Electronics Technology program for the term in which they wish to take their comprehensive examination.

**NET 367C. Exit Exam for University Certificate in Cyber Systems and Network Security. (0 Credits)**

A. Prerequisite: A minimum of 9 semester hours of NET courses completed, and EET 252. Registration in NET 367c is required of all students in the Cyber Systems and Network Security Technology university certificate, for the semester in which they wish to take their comprehensive exit examination.

**NET 385. Advanced Switches & Routers. (3 Credits)**

(3) A. Prerequisite: NET 343. Configure and troubleshoot small to mid-sized switched LANs. Principles of switch and router startup, configuration and management, VLAN, trunking, STP, advanced routing, WAN, scaling IP address space. Configure, apply and verify Access Control Lists. 2 Lec/2 Lab.

**NET 395. Special Topics in NET. (2-3 Credits)**

A. Formerly EET 395. Prerequisite: 30 credit hours or more completed, and (EET 252 or NET 303). Emerging technologies in the area of Network security and electronics (NET). May be retaken up to a maximum of 9 hours provided subject matter differs each time. Lec/Lab.

**NET 399. Associate Degree Capstone. (3 Credits)**

II. Formerly EET 399. Prerequisite: 30 credit hours or more completed, with a minimum of 9 semester hours of NET coursework completed, and a minimum of 6 semester hours of EET coursework completed. A project and research oriented course which serves as a capstone experience at the Associate Degree level. Design, implementation, analysis, and troubleshooting of electronic and computer technology related systems, and managing a technical.

**NET 403. Advanced LANSs and PC Communication. (3 Credits)**

A. Formerly EET 403. Prerequisite: NET 303 or EET 303 or CIS 375. This course will cover installation, configuration, troubleshooting and maintaining common server platforms. The participants will be given the opportunity to setup and manage network hardware, operating systems and applications. 2 Lec/2 Lab.

**NET 440. Wired/Wireless Communications. (3 Credits)**

A. Prerequisite: EET 257; MAT 112B or higher and PHY 101. Principles of communication over fiber and other wired/wireless media; digital and analog data transmission; modulation and multiplexing of data. Communication system components, safety, testing and troubleshooting. 2 Lec/2 Lab.

**NET 454. Wireless/WAN Security. (3 Credits)**

A. Prerequisites: ((NET 303 or CIS 375) and NET 354) or CSC 338. Security considerations in wireless and WANs. Wi-Fi, 802.11x, WPA, RADIUS, encryption, VPNs, VLANs, AAA authentication, Network Security Appliances, and secure protocols. Laboratory based configuration and security testing of WAPs, appliances and servers. 2 Lec/2 Lab.

**NET 467. Exit Exam for BS in NET. (0 Credits)**

(0) A. Prerequisite: Consent to advisor. Registration in NET 467 is required of all undergraduate B.S. (NET) students for the term in which they wish to take their comprehensive examination, including the exit exam and advisor approved certification or license.

**NET 499. Senior Capstone. (3 Credits)**

II. Formerly EET 499. Prerequisite: 90 credit hours or more completed, with a minimum of 18 semester hours of NET coursework completed, and a minimum of 9 semester hours of EET coursework completed, and AEM 310W. A project and research oriented course which serves as a capstone experience at the Bachelor Degree level. Design, implementation, analysis, and troubleshooting of networking, computers and electronics technology related systems, and managing a technical project.