

The Certificate in Livestock Management is designed to provide students with basic skills in livestock production management for employment opportunities on farms, ranches, and agriculture sales and services. The certificate will enhance technical competencies for individuals currently working in the livestock industry or those individuals wanting to gain employment in this industry. For students interested in continuing their studies, all courses are applicable to the A.A.S. or B.S. degree programs related to Livestock Production and/or Animal and Veterinary Sciences.

Total Curriculum Requirements.....12-15 hours
 AGR 125, 126(1); AGR 225 or 330(2); select 1 course from AGR 312(4), 321(4), 372(2-6), 373(4), 374, 375(4), 376(4), 377, or 421; select 1 course from 326(4), 327(4), 328(4), 329(4), 332, or 380(4).

DEPARTMENTAL CERTIFICATE IN TURFGRASS MANAGEMENT

The Certificate in Turfgrass Management can be used to enhance technical competencies for those working in the turfgrass industry or in order to gain employment in the turfgrass industry. In addition, individuals who have or are pursuing a degree in Land Management, Parks and Recreation, and Physical Education/ Sports Development can pursue this certificate in order to make themselves more marketable. Turfgrass management knowledge is in high demand with many positions available in golf courses, commercial and residential lawn and landscape, sports fields and parks. This curriculum affords students an understanding of proper turfgrass selection for the environment and function, maintenance for growth, density, and repair from use, care techniques related to the main turf-based sports (exs. field/logo painting, baseball infield care, cup cutting and pin placement in golf) as well as integrated pest and surrounding landscape management.

Total Curriculum Requirements.....13 hours
 OHO 351 (4), 353, 354, and 370

DEPARTMENT OF APPLIED ENGINEERING AND TECHNOLOGY

Interim Chair
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Faculty

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The Department of Applied Engineering and Technology offers Bachelor of Science degree programs in: Aviation, Construction Management, and Engineering Technology Management. The Department also offers a degree program for Engineering Technology Education in cooperation with the College of Education and Applied Human Sciences.

DEPARTMENT GOALS

The Department of Applied Engineering 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; prepare professionals for careers in Career and Technical Education through Associate of Applied Science, Bachelor of Science and Master of Science degree programs; and to provide programs of quality instruction and professional services to the University and to the community.



Federal Aviation Administration

AVIATION

The EKU aviation program offers a Bachelor of Science degree in Aviation with three concentrations: Aerospace Management, Aerospace Technology, 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 Program is an FAA Part 141 approved Flight School and the only university program in Kentucky to offer the 1000 hour restricted ATP certificate.

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.



AMERICAN COUNCIL FOR CONSTRUCTION EDUCATION
 PARTNERSHIP FOR EXCELLENCE

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

SCIENCE, TECHNOLOGY, ENGINEERING, & MATHEMATICS

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.

CAREER AND TECHNICAL EDUCATION

Engineering/Technology Education Concentration

Graduates of the Engineering/Technology Education concentration of the B.S. degree program in Career and Technical Education are prepared for teaching careers at the middle school and high school levels. An Engineering/Technology Education teacher is prepared to enjoy a career that is rewarding in many ways. The opportunity to plan and guide the learning experiences of students in the use of robots, computers and other “high tech” equipment in problem solving and production activities are rewards found in few other professions.

Graduates of the Engineering/Technology Education

concentration of the Career and Technical Education program will complete a student teaching experience in a professional setting; will be able to prepare a portfolio that includes instructional material development, samples of assessment and a professional growth plan; and will be able to demonstrate technical competence in the areas of 1) basic engineering/technology, 2) civil engineering/technology, 3) electrical engineering/technology, and 4) mechanical/industrial engineering technology.

This program is offered in cooperation with the College of Education and Applied Human Sciences.

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

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

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.

ASSOCIATE OF APPLIED SCIENCE - CAREER AND TECHNICAL EDUCATION

The Career and Technical Education Associate of Applied Science Degree program is designed for in-service technical teachers employed in area technical centers and post-secondary technical schools. Graduates of the Career and Technical Education AAS degree program will be able to plan and implement instruction for technical education courses; develop and analyze

assessment instruments for technical education courses; develop and apply appropriate teaching strategies for technical education courses; and complete a Practicum in Career and Technical Teaching.

This program is offered in cooperation with the College of Education and Applied Human Sciences.

MINORS

The department also offers minors in Applied Engineering Management, Aviation Administration, Aviation (Flight), Computer Electronics Technology, Construction Management, and Land Surveying.

ENDORSEMENT/CERTIFICATES

A university certificate in Land Surveying is offered by the Department of Applied Engineering and Technology.

BACCALAUREATE DEGREES

**BACHELOR OF SCIENCE (B.S.)
ENGINEERING TECHNOLOGY
MANAGEMENT
CIP Code: 15.1501**

Graduates must have an overall GPA at or above 2.00, and 2.25 in the major with no major grade below a “C”. Transfer students will be treated on an individual basis. The Engineering Technology Management program is accredited by the Association of Technology, Management, and Applied Engineering.

UNIVERSITY GRADUATION REQUIREMENTS

- General Education..... 36 hours
- Student Success Seminar 1 hour (BUS 100; waived for transfers with 30+ hrs.)
- Writing Intensive Course (Hrs. incorporated into Major/Supporting/Gen Ed/Free Electives category)
- Upper division courses (42 hrs. distributed throughout Major/Supporting/Gen Ed/Free Electives categories)
- ACCT - Engineering Technology Management majors fulfill ACCT with AEM 499. (Credit hours are incorporated into program requirements below.)

Total hours University Graduation Requirements 37 hours
MAJOR REQUIREMENTS

College Requirement

BUS 300 (CR only, no hours) and BUS 400 (CR only, no hours).

Core Courses 34-35 hours

AEM 195, 202, 308; 310W; 332, 349(1), 407, 408, 499, CON 420, STA 215 or 270(4), and TEC 161.

Manufacturing Concentration 33 hours

AEM 201, 301, 330, 352, 371, 390, and EET 251, plus 12 hours from the following technical electives. AEM 336, 382, 383, 392, 395, 397, 506; AEM 530, or STA 585; CON 303, EET 252, 257, 351, NET 303, 440.

Technology Concentration 33 hours

Thirty-three hours of approved technical electives.

Supporting Course Requirements 6-9 hours

CHE 101/101L(4) (^oElement 4) or 111/111L(4) (^oElement 4);

ECO 130 (^oElement 5B) or 230 (^oElement 5B) or ACC 200; MAT 120 (^oElement 2) and 211, or six hours of higher level MAT courses; and PHY 131(5) (^oElement 4).

^o = Course also satisfies a General Education element.

Hours are included within the 36 hr. General Education requirement above. A maximum of 6 hours can apply toward Element 4.

Exit Exam Requirement 0 hours

AEM 467

Students must take an AEM assessment examination before graduation. An exam fee is required.

Free Electives 6-10 hours

TOTAL HOURS TO COMPLETE DEGREE 120 hours

Students must take an assessment examination before graduation. An exam fee is required.

+Transfer students with an associate degree in a technical related field may not need to take these 12 hours of electives if upper division requirement can be completed.

**BACHELOR OF SCIENCE (B.S.)
ENGINEERING TECHNOLOGY
MANAGEMENT
AND
MASTER OF SCIENCE (M.S.)
TECHNOLOGY MANAGEMENT
[MANUFACTURING CONCENTRATION]
ACCELERATED 3+2 DUAL DEGREE PROGRAM
CIP Code: 15.1501**

Students accepted to the 3+2 Accelerated Dual Degree Program are able to complete their B.S. degree and M.S. degree within five calendar years because of the accelerated curriculum and because nine semester hours of graduate coursework will apply to both the undergraduate B.S. degree and the graduate M.S. degree. Only undergraduate students of proven academic ability will be considered for the program. Students should be aware that, in order to maintain their progress in the accelerated 3+2 program, careful coordination with their advisor is required. Depending upon undergraduate progress at the time of 3+2 admission, some summer-school classes may be needed.

Admission Requirements:

Students interested in this program must satisfy all the following conditions:

1. Junior or Senior standing
2. Overall grade point average (GPA) of at least 3.0 at the time of admission to the 3+2 program
3. Approval from department and Graduate School (see the form at <http://gradschool.eku.edu/graduate-school-forms>)
4. Must maintain an overall undergraduate and graduate grade point average (GPA) of at least 3.0 to continue in the 3+2 program.

UNIVERSITY GRADUATION REQUIREMENTS

- General Education..... 36 hours
- Student Success Seminar (BUS 100; waived for transfers with 30+ hrs.) 1 hour
- Writing Intensive Course (Hrs. incorporated into Major/Supporting/Gen Ed/Free Electives category)

- Upper division courses (42 hrs. distributed throughout Major/Supporting/Gen Ed/Free Electives categories)
- ACCT Engineering Technology Management majors fulfill ACCT with AEM 499. (Credit hours are incorporated into program requirements below.)

Total Hours University Graduation Requirements ... 37 hours

MAJOR REQUIREMENTS

College Requirement

BUS 300 (CR only, no hours) and BUS 400 (CR only, no hours)

Core Courses 37-38 hours

AEM 195, 202, 308; 310W; 332, 349(1), 408, 499, 706, 801, 804, STA 215 or 270(4), and TEC 161.

Manufacturing Concentration 30 hours

AEM 201, 301, 330, 352, 371, 390, and EET 251, plus 9 hours from the following technical electives. Note that 6 hours must be upper division: AEM 336, 382, 383, 392, 395, 397; AEM 530 or STA 585; CON 303, EET 252, 257, 351; NET 303, 440.

Technology Concentration 30 hours

Thirty hours of approved technical electives.

Supporting Course Requirements 6-9 hours

CHE 101/101L (4) (^GElement 4) or 111/111L (4)(^GElement 4); ECO 130 (^GElement 5B) or ECO 230 (^GElement 5B) or ACC 200; MAT 120 (^GElement 2) and 211, or 261, or six hours of higher level MAT courses; and PHY 131(5) (^GElement 4).

^G = Course also satisfies a General Education element. Hours are included within the 36 hr. General Education requirement above. A maximum of six hours can apply toward Element 4.

Exit Exam Requirement:

AEM 467(0)

Students must take an AEM assessment examination before graduation. An exam fee is required.

Free Electives 6-10 hours

TOTAL HOURS TO COMPLETE DEGREE 120 hours

BACHELOR OF SCIENCE (B.S.)

AVIATION

CIP Code: 49.0101

UNIVERSITY GRADUATION REQUIREMENTS

- General Education..... 36 hours
(9 supporting hours are included within the 36 hours of General Education requirements)
- Student Success Seminar (BUS 100; waived for transfers with 30+ hrs.) 1 hour
- Writing Intensive Course (Hrs. incorporated into Major/Supporting/Gen Ed/Free Electives category)
- Upper division courses (42 hrs. distributed throughout Major/Supporting/Gen Ed/Free Electives categories)
- ACCT - Aviation majors will fulfill ACCT with AVN 401. (Credit hours are incorporated into program requirements below.)

Total hours University Graduation Requirements37 hours

MAJOR REQUIREMENTS

- All aviation courses (AVN prefix) must be completed with a grade of “C” or above.

College Requirement: Professional Skills Seminar

BUS 300 (CR only, no hours) and BUS 400 (CR only, no hours).

Core Courses36 hours

AVN 150, 250, 315, 325, 329W, 340, 370, 390, 401, 402, 410, 460. Majors must also select one of the following concentrations:

Concentrations (select one):

Professional Flight36 hours

AVN 161 (4), 161A (1) , 162A (1) , 220 (4), 221A (1), 222A (1), 280(1), 300 (2), 301A (2), 302A (1), 303A (1), 304A (2), 305 (1), 305A (1), 330, 415, 415A (1), 425, and 435.

Aerospace Management 33 hours

ACC 200, AVN 341, 360, ECO 231, BUS 204, MKT 301, and 15 hours free electives.

**Note: selecting only lower division courses may result in additional course work being needed to meet the University requirement of 42 hours of upper division credits. Students are referred to Degree Works to check for course pre-requisites and monitor upper division hours.*

Aerospace Technology.....33 hours

AVN 360, 435, and twenty-seven credit hours of aviation technical electives.

Supporting Course Requirements 9 hours

AVN 335 or GEO 315; ECO 230 (^GElement 5B); MAT 112 or higher (^GElement 2); BIO 307 or BUS 303 or 301; PHY 101 or higher (^GElement 4); and CMS 100 or CMS 210 or EES 250 (^GElement 1C); TEC 161.

Aerospace Management (in addition).....3 hours

STA 215

^G = Course also satisfies a General Education element.

Supporting hours are included within the 36 hr. General Education requirement above.

Free Electives..... 2-5 hours

Exit Exam Requirement:

Students must take an Aviation exit examination before graduation.

AVN 467 (CR only)..... 0 hours

TOTAL HOURS TO COMPLETE DEGREE 120 hours

Note: VA Regulations for Aviation Courses

Students using GI Bill® benefits to fund an aviation course must complete each course and/or flight lab within one year of initial registration; failure to do so will result in the student being assigned a grade of NC (No Credit). Students using GI Bill® benefits must repay to the VA the cost (including a portion of stipends for living expenses) related to any course in which a grade of NC is earned. All student participants receiving Veterans Administration benefits have 19 calendar weeks from the date of the first flight event to complete an Aviation flight lab.

GI Bill® is a registered trademark of the U.S. Department of Veterans Affairs (VA). More information about education benefits offered by VA is available at the official U.S. government Web site at <http://www.benefits.va.gov/gibill>

Aviation Flight Hours & Costs/Fees

A complete listing of aviation related fees for the current academic year is published on the EKV Aviation Flight Fees website (<http://aviation.eku.edu/aviation-flight-fees>), and included in materials provided by the flight instructors.

Additionally, all VA funded flight students receive this information from the EKV and Veteran Affairs during their enrollment certification process. Students should verify through their regional Department of Veterans Affairs processing office if

they have questions regarding their eligibility to use VA resources to complete the requirements of the EKU Aviation program.

**BACHELOR OF SCIENCE (B.S.)
CAREER AND TECHNICAL EDUCATION/
TEACHING
CIP Code: 13.1319**

UNIVERSITY GRADUATION REQUIREMENTS

- General Education..... 36 hours
- Student Success Seminar (BUS 100; waived for transfers with 30+ hrs.)..... 1 hour
- Writing Intensive Course (Hrs. incorporated into Major/ Supporting/Gen Ed/Free Electives category)
- Upper division courses (42 hrs. distributed throughout Major/ Supporting/Gen Ed/Free Electives categories)
- ACCT - Career and Technical Education majors will fulfill ACCT with CTE 463 or ESE 499. (Credit hours are incorporated into program requirements below.)

Total Hours University Graduation Requirements.....37 hours

MAJOR REQUIREMENTS

College Requirements:

BUS 300(CR only, no hours) and 400 (CR only, no hours).

Pre-Service Teacher Education Program

Career and Technical Education Requirements...9 hours

CTE 262, 361, and 363.

Agriculture Education (includes all areas below).....45 hours

Animal Science45 hours
AGR 125, 126 and one class from AGR 321, 327, 328 or 380; Agricultural Systems Management AGR 213 and one class from AGR 272, 311, 362 or 383; Soil Science AGR 215 and one class from AGR 315, 317, or 318; Plant Science AGR 130, 131 or OHO 131, 132 and one class from AGR 312, 417 and OHO 384 or 385; Agriculture Business AGR 308 and one class from AGR 310, 350, 409 or 440. AGR 304, 305 plus Agriculture or Horticulture electives to make 45 credit hours selected in consultation with your advisor.

Technical Education45 hours**

45 semester hours of technical courses to be chosen in consultation with the advisor. A maximum of 18 semester hours (in CTE 204, 205, 206, 304, 305, and 306 may be allowed by proficiency examination; TEC 349*[9 hours]).

Engineering/Technology Education*45 hours

AEM 195, 201, 371, 383, CON 121, 201, 294, EET 252, NET 302, 303, TEC 161, 190, 303, 404; select three hours from AVN 150, GCM 211, TEC 102 and 141.

Professional Education Requirements31 hours

EDF 203(1), 219, 413(2), EMS 300W(1), 474, 490(1), ESE 552, SED 104^G(Element 6), 402(2), *TEC 368, and 12 credit hours of Clinical Experiences: CED 100 (0.5), 200(0.5), 300(0.5), 400(0.5), 450(1), 499(9).

^G = Course also satisfies a General Education element. Hours are included within the 36 hours in General Education.

^c = Course also satisfies Core or Concentration requirements

In-Service Teacher Education Program

Professional Education Core.....25 hours

CTE 164, 261, 361, 363, 364, 463(4), EDF 320, and TEC 161.

In-Service Teacher Education/Training and Development Concentrations:

Technical Education.....45 hours

45 semester hours of technical courses to be chosen in consultation with the advisor. A maximum of 18 semester hours (in CTE 204, 205, 206, 304, 305 and 306 may be allowed by proficiency examination).

Occupational Training and Development45 hours

Technical courses chosen in consultation with advisor. A maximum of 18 semester hours (in CTE 204, 205, 206, 304, 305 and 306 may be allowed by proficiency examination).

Supporting Course.....3^G hours

MAT 114 (^GElement 2) or higher; SED 104* (^GElement 6).

^G = Course also satisfies a General Education element. Hours are included within the 36 hours in General Education.

*Course meets Professional Education Requirements.

Free Electives.....3-5 hours

EXIT REQUIREMENT.....0 hours

PRAXIS EXAMINATION

Students must register for and take the PRAXIS exam which correlates to their degree program, per College of Education requirements. Refer to Degree Works for exam details. The PRAXIS exam must be taken prior to student teaching.

TOTAL HOURS TO COMPLETE DEGREE120 hours

**Graduates completing the Pre-Service Teacher Education concentration must have a minimum of 2000 clock hours of planned and supervised work experience in the occupation in which they will teach or a minimum of three years of approved work experience in the occupation in which they will teach. Students must also take the PRAXIS II Specialty Examination before graduation.

Candidates earning a degree that leads to pre-service teacher certification must take the PRAXIS Series (Professional Assessments for Beginning Teachers) and PLT (Principles of Learning and Teaching) exams as a requirement for graduation. Candidates are encouraged to review the schedule for PRAXIS and PLT registration deadlines prior to beginning the senior year. Specialty exams are required for each certification area sought and it may take more than one test date to complete all requirements. Candidates should confer with their education advisor/counselor to determine the most optimal time to take required exams.

† Those desiring eligibility to teach in pre-engineering education programs at the middle school and high school level should take the following general education courses: CHE 111, MAT 114, 120, PHY 131.

Career and Technical Education concentrations require all pre-service students to meet the general education knowledge for initial teacher preparation requirements (see College of Education section of this *Catalog*).

The BS degree program in Career and Technical Education is accredited by the Council for the Accreditation of Educator Preparation.

This program is offered in cooperation with the College of Education and Applied Human Sciences.

**BACHELOR OF SCIENCE (B.S.)
CONSTRUCTION MANAGEMENT**
CIP Code: 52.2001

UNIVERSITY GRADUATION REQUIREMENTS

- General Education..... 36 hours
- Student Success..... 1 hour
Seminar (waived for transfers with 30+hrs.)
- Writing Intensive Course (Hrs. incorporated into Major/
Supporting/Gen Ed/Free Electives category)
- Upper division courses ((42 hrs. distributed throughout Major/
Supporting/Gen Ed/Free Electives categories)
- ACCT - Construction Management majors will fulfill ACCT
with CON 499. (Credit hours are incorporated into program
requirements below.)

Total Hours University Graduation Requirements.....37 hours

MAJOR REQUIREMENTS

College Requirement: Professional Skills Seminar

BUS 300 (CR only, no hours) and BUS 400 (CR only, no hours).

Major Requirements..... 59 hours

CON 121, 201, 202, 221, 294, 303, 307, 320, 322, 324, 325 (4), 326, 349 (3), 420, 421, 425, 426, 428, and 499(4). *Three separate enrollments of CON 349 are recommended in order to achieve a total of 3 cr. hrs.*

Supporting Course Requirements..... 24 hours

ACC 201; AEM 310W or CCT 201; AEM 408 or MGT 301; ECO 230 (^GElement 5B), BUS 204, and GLY 108 (^GElement 4); MAT 120 (^GElement 2), 211, and 217(1) or seven hours of higher level MAT courses; PHY 131(5) (^GElement 4), TEC 161, and three hours of ACC, CCT, CIS, ECO, FIN, GBU, RMI, MGT, MKT, QMB, or RST electives* as approved by major advisor**.

^G = Course also satisfies a General Education element. Hours are included within the 36 hr. General Education requirement above. A maximum of six hours will count toward Element 4.

*Business electives may be upper or lower division as necessary in order to complete upper division requirement.

** Students wishing to pursue the Minor in Business must confer with their major advisor to make substitutions to the supporting course requirements. QMB, RMI, and RST courses do not apply to the Minor in Business.

Exit Exam Requirement:

Students must take a construction assessment examination before graduation. An exam fee is required.

TOTAL HOURS TO COMPLETE DEGREE 120 hours

The Construction Management program is accredited by the American Council for Construction Education.

ASSOCIATE DEGREES

**ASSOCIATE OF APPLIED SCIENCE (A.A.S.)
CAREER AND TECHNICAL EDUCATION
(TEACHING)**
CIP Code: 13.1319

Note: Enrollment in this program is restricted to in-service technical

teachers and graduates of a technical program at a Community or Technical College.

UNIVERSITY GRADUATION REQUIREMENTS

- General Education.....20-21 hours
Elements: 1A, and 1B (ENG 101,102, or 105 with a grade of “A” or “B”); 2 (MAT 114 or higher); any 3A or 3B; 5A or 5B; five hours of any other General Education coursework.
 - Student Success Seminar (BUS 100; waived for transfers with 30+ hrs.)1 hour
- Total Hours University Graduation Requirements.....21-22 hours**

MAJOR REQUIREMENTS

The AAS degree program in Career and Technical Education is accredited by the Council for the Accreditation of Educator Preparation.

Graduates of this program must have a minimum of 4,000 hours of supervised work experience or four years of occupational experience in the area to be taught.

Core Courses24 hours

TEC 161; 21 hr from the technical area, or related to the area in which the individual proposes to teach, as approved by the advisor; a maximum of nine hrs (CTE 204, 205, 206) may be earned by proficiency examination; nine hours credit may be supervised work experience (TEC 349).

Supporting Courses21 hours

CTE 261, 361, 364, 463*(12).

*In-service teachers should substitute CTE 164, 363, 463 (4), and EDF 319 or SED 104 for CTE 463 (12).

Exit Exam:

Students must take a professional career and technical education assessment and the Teacher Occupational Competency Test (TO CT) before graduation.

EXIT REQUIREMENT.....0 hours

PRAXIS EXAMINATION

Students must register for and take the PRAXIS exam which correlates to their degree program, per College of Education requirements. Refer to Degree Works for exam details. The PRAXIS exam must be taken prior to student teaching.

TOTAL HOURS TO COMPLETE DEGREE 66-67 hours

This program is offered in cooperation with the College of Education and Applied Human Sciences.

**ASSOCIATE OF APPLIED SCIENCE (A.A.S.)
TECHNOLOGY**
CIP Code: 15.0612

UNIVERSITY GRADUATION REQUIREMENTS

- General Education18 hours
Elements: 1A; 1B; 1C; 2 (MAT 112 or higher); 3A or 3B; 5B (ECO 120 or 230).
- Student Success Seminar (BUS 100; waived for transfers with 30+ hrs.)1 hour

Total Hours University Graduation Requirements19 hours

MAJOR REQUIREMENTS

Applied Engineering (AE).....40-41 hours

AEM 195, 201, 202, 301 or 392, 308, 330, 332, 336 or 352 or 383, 371 or 390; EET 251; CHE 101/101L (4) or CHE 111/111L (4) or

PHY 131 (5); MAT 120; STA 215 or 270.

Computer Electronics (CE)40 hours
(AEM 352 or EET 253 or 351); (CSC 160 or higher; or CIS 215 or higher); EET 251, 252, 257; NET 302, 303, 343, 349(1), 354, 395 or 403, (399 or 499); PHY 101, or higher (°Element 4); TEC 161.

Free Electives.....0-1 hours

Exit Exam.....0 hours
Students must take an assessment examination before graduation: AEM 367 or 467 (AE), NET 367a (CE), CR only, no hours.

TOTAL HOURS TO COMPLETE DEGREE60 hours

The AAS degree program in Technology is accredited by the Association of Technology, Management, and Applied Engineering (ATMAE).

MINORS

MINOR IN AEROSPACE MANAGEMENT Aviation Program

Requirements.....18 hours
A student may minor in aerospace management by completing a minimum of 18 semester hours as follows: AVN 150, 315, 340, 350, 460, and AVN 341, or 349, or 360.

MINOR IN ENGINEERING TECHNOLOGY MANAGEMENT

Requirements.....18 hours
AEM 195, AEM 201, 202*, 308, and six hours of AEM upper division electives. No more than nine hours of courses taken for a major may be counted toward this minor.
*MAT 112A and 112B or higher and STA 215 or 270 are prerequisites for AEM 202.

MINOR IN AVIATION (FLIGHT) Aviation Program

Requirements.....23 hours
A student may minor in aviation (flight) by completing a minimum of 23 semester hours as follows: AVN 150, 161, 161A, 162A, 220, 221A, 222A, 300; 315; GEO 315; GEO 315 or AVN 335.

MINOR IN COMPUTER ELECTRONICS TECHNOLOGY

Requirements.....18 hours
EET 251, 252, (EET 253 or 351 or AEM 352), NET 302, 303, and (NET 343 or NET 354 or 395 or upper-division NET course approved by advisor). Prerequisites may be required for some course selections.

Exit Exam:

Students must take an assessment examination for completing the minor. NET 367b (CR only, no hours)

MINOR IN CONSTRUCTION MANAGEMENT

The Construction Management minor provides technical and managerial knowledge about the construction industry. It is an appropriate supplement to a student who is majoring in a profession affiliated with construction. This minor is particularly relevant to students majoring in business, insurance, management,

manufacturing, and marketing.

Requirements.....22 hours
CON 121, 201, 202, 294, 325, 324, and 421. No more than nine hours of courses taken for a major may be counted toward this minor.

MINOR IN LAND SURVEYING

Designed to prepare students to take the Fundamentals of Land Surveying Examination (administered by the Kentucky State Board of Licensure for Professional Engineers & Land Surveyors) upon completion of the core curriculum in land surveying or during final year in a Baccalaureate Degree program if twelve (12) hours or more of the core curriculum in land surveying have been completed. This minor program includes all requirements of the core curriculum in land surveying.

Requirements.....21 hours
CON 221, 294, 320, 321; GEO 353, 453, 455. Non-Construction Management majors must also take BUS 204.

MINOR IN QUALITY ASSURANCE TECHNOLOGY

Requirements.....18 hours
STA 215 or 270, AEM 202, 332, 336, 506, and 530 or STA 585. No more than nine hours of courses taken for a major may be counted toward this minor.

CONCENTRATIONS

APPLIED ENGINEERING AND TECHNOLOGY CONCENTRATION IN THE ASSOCIATE OF ARTS IN GENERAL STUDIES DEGREE

See page 83 of this *Catalog* for the Applied Engineering and Technology Concentration requirements listed in the Associate of Arts in General Studies degree section.

COMPUTER NETWORKING SYSTEMS CONCENTRATION IN THE ASSOCIATE OF ARTS IN GENERAL STUDIES DEGREE

See page 83 of this *Catalog* for the Computer Networking Systems Concentration requirements listed in the Associate of Arts in General Studies degree section.

ELECTRICITY AND ELECTRONICS CONCENTRATION IN THE ASSOCIATE OF ARTS IN GENERAL STUDIES DEGREE

See page 83 of this *Catalog* for the Electricity and Electronics Concentration requirements listed in the Associate of Arts in General Studies degree section.

CERTIFICATES

DEPARTMENTAL CERTIFICATE IN CYBER SYSTEMS AND NETWORK SECURITY

This certificate program will enhance technical competencies, including the knowledge, skills, and work practices, used for securing networked cyber systems. For students interested in continuing their studies at the Baccalaureate level, all of the courses in this certificate may be used as part of the BS degree

program related to Cyber Systems Technology.

Requirements21 hours
 EET 252; NET 302*, 303*, 343, 354, 403; (NET 395 or EET 351)
 *Prerequisite of a computer Applications course such as TEC161, INF 104, or CIS 212.

UNIVERSITY CERTIFICATE IN LAND SURVEYING

The curriculum for the Land Surveying Certificate is aimed at students who have, or are pursuing, a four-year degree in a program other than land surveying from a college or university of recognized standing. This certificate program includes all requirements of the Kentucky core curriculum in Land Surveying. Upon completion of this curriculum, students will receive a certificate permitting them to take the Kentucky Fundamentals of Land Surveying Examination.

Requirements.....24 hours
 CON 221, 294, 320, 321; BUS 204; GEO 353, 453, 455.

DEPARTMENT OF BIOLOGICAL SCIENCES

Chair
Dr. Malcolm Frisbie
 (859) 622-1531
 Science Building 3238

Faculty

K. Blank, A. Braccia, D. Brown, S. Byrd, P. Calie, L. Cormier, B. Davis, L. Dodd, C. Elliott, M. Frisbie, S. Harrel, D. Hayes, J. Koslow, B. Kraemer, L. Middleton, C. Mott, O. Oakley, V. Peters, M. Pierce, S. Richter, G. Ritchison, W. Staddon, S. Sumithran, and A. Wigginton.

BACCALAUREATE DEGREES

**BACHELOR OF SCIENCE (B.S.)
 BIOLOGY**
 CIP Code: 26.0101

UNIVERSITY GRADUATION REQUIREMENTS

- General Education..... 36 hours
- Student Success Seminar 1 hour
 (SCO 100; waived for transfers with 30+ hrs.)
- Writing Intensive Course (hrs. incorporated into Major/ Supporting/Gen Ed/Free Electives category)
- Upper division courses (42 hrs. distributed throughout Major/ Supporting/Gen Ed/Free Electives categories)
- ACCT - Biology majors will fulfill ACCT with one of the following: BIO 320, 349, 598, HON 420 with a thesis topic approved by the Biology department, a program-approved leadership experience, or a program-approved study abroad experience. (Credit hours are incorporated into program requirements below.)

Total Hours University Graduation Requirements37 hours

MAJOR REQUIREMENTS

Core Courses29 hours

BIO 111(4), 112(4), 315(4), 316(4), 318(4), 319(4), 320(4), and 495(1).

Concentrations: (Must select at least one; courses used for one concentration may not count toward another concentration.)

Aquatic Biology15 hours
 BIO 525, 542, 557, 558, and one course from BIO 556, 561, or GLY 315.

Biodiversity and Conservation.....15-17
 BIO 514, BIO 532, 6 hours from BIO 335, 342(4), 525, 528, 536, 542, 548, 553, 554, 556, 557, 595 and 3 hours from BIO 349(1-3), 520, 521(4), 550(4), 555, 558, 561, 598(1-6).

General Biology12 hours
 Choose 12 hours from the following: any 300, 400, or 500 level BIO, CHE, or PHY course not included in Biology Core or from which Biology majors are not excluded, PHY 132(5) or PHY 202(5). *Students applying to graduate school are strongly advised to include CHE 362/362L(4) and PHY 132(5) or 202(5) as part of the 12 hours*

Biology Teaching.....3 hours
 BIO 348

Supporting Course Requirements:

Aquatic Biology and General Biology 14-16 hours

CHE 111/111L (4) (^GElement 4), 112/112L (4), 361/361L (4); MAT 234(4) (^GElement 2) or 211(^GElement 2); PHY 131(5) or 201(5) (^GElement 4); STA 215 or STA 270(4).

(^G = Course also satisfies a General Education element. Hours are included within the 36 hr. General Education requirement above.)

Biodiversity and Conservation.....20-23 hours

CHE 111/111L (4) (^GElement 4), 112/112L (4), 361/361L (4); MAT 234(4) (^GElement 2) or 211(^GElement 2); PHY 131(5) or 201(5) (^GElement 4); STA 215 or STA 270(4); CSC 174 or GEO 353; AGR 215/216(4), GEO 302W, GEO 325, GEO 435, GLY 303, or GLY 315.

(^G = Course also satisfies a General Education element. Hours are included within the 36 hr. General Education requirement above.)

Biology Teaching.....21-26 hours
(must also complete all Professional Education Requirements)

CHE 111/111L (4) (^GElement 4), 112/112L (4), 361/361L (4); CHE 362/362L (4); MAT 120(^GElement 2), 122(5) (^GElement 2), 211 (^GElement 2), or 234(4) (^GElement 2); PHY 131(5) or 201(5) (^GElement 4); PHY 132 (5) or PHY 202 (5) or GLY 108; STA 215 or STA 270(4)

(^G = Course also satisfies a General Education element. Hours are included within the 36 hr. General Education requirement above.)

Professional Education Requirements.....37 hours

EDC 300, EDF 203, 204(2), 219, 413; SED 104 (^GElement 6), EMS 300W, 474, 490; ESE 561 and 11 credit hours of Clinical Experiences: CED 100(0.0), 200(0.0), 300(0.5), 400(0.5), 450(1), 499(9).

^G = Course also satisfies a General Education element. Hours are included within the 36 hours in General Education.

Free Electives..... 0-28 hours

EXIT REQUIREMENT.....0 hours

PRAXIS EXAMINATION

Students must register for and take the PRAXIS exam which

SECTION SEVEN - COURSE DESCRIPTIONS

nine hours if subject matter is different each time. Credit will not be awarded for both CMS 495 and CMS 490 Special Topics in Leadership.

CMS 495 Communication, Leadership and Change. (3) A. Prerequisites: Senior standing and CMS 305. A capstone course that helps students reflect on and apply their learned experiences in communication with an emphasis on leadership. Students integrate learned theory and experiences to real world situations. Completion of a capstone project is required.

CMS 499 Independent Study in Communication Studies. (1-6) I, II. Individual research and reading on a specified speech communication subject. Regular consultation and final paper or performance required. Students must have the independent study proposal form approved by faculty supervisor and department chair prior to enrollment. May be retaken to a maximum of six hours.

COM—Communication
Prof. Ida Kumoji-Ankrah, Chair

COM 290 Topics in Communications: _____. (1-3) A. Prerequisite: department approval. Special topics beyond the scope of regularly offered courses. May be retaken to a maximum of nine hours provided the subject matter differs each time. Specific topics included in the schedule.

COM 300 Exit Requirement: Communication. (0) A. Required of all Department of Communication 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. May substitute for BUS 300, BUS 400, or GSD 300.

COM 345 Literature and Film. (3) A. Cross-listed as ENG 345. Prerequisites: ENG 102 or 102R (or 105B) or HON 102. Examination of the relationships between film and literature through a comparative study of the stylistic and technical elements of the two media. Credit will not be awarded for both COM 345 and ENG 345.

COM 349 Applied Learning in Multi-Media Studies. (.5-8) A. Prerequisites: junior standing, "B" average in all courses within the department, and departmental approval. Work under faculty and field supervisor 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. May not satisfy major or minor requirements within the department.

COM 349 A-N Cooperative Study: Multi-Media Studies. (.5-8) A. Prerequisites: junior standing, "B" average in all courses within the department, and departmental approval. Work under faculty and field supervisor 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. May not satisfy major or minor requirements within the department.

COM 400 Studies in Communications: _____. (1-3) A. Prerequisite: will vary with course offering. Study of specific areas of communications through workshops, short courses, institutes, or through the presentation of a specific course which examines timely, topical, or specialized concerns in the field. Specific topic included in schedule. May be retaken to a maximum of nine hours.

COM 599 Independent Study in Communication: _____. (1-3) A. Prerequisites: Completion of at least 90 hours; students must have the Independent Study Proposal Form approved by faculty supervisor and department chair prior to enrollment. May be retaken to a maximum of three hours, providing additional study projects differ.

CON—Construction Management
Dr. Dan Enz, Coordinator

CON 121 Introduction to Construction. (3) 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 I. (3) 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. 2 Lec/2 Lab.

CON 202 Materials and Methods of Construction II. (3) 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) 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 294 Construction Graphics. (3) 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) 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) 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) 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) 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) I, II. Prerequisites: CON 303 and MAT 211 or 234 (4) and 217(1-2). 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) 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) 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) I, II. Prerequisites: CON 201, 202; MAT 120 with a minimum

grade of "C"; and TEC161. 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. 3 Lec/1 Lab.

CON 326 Horizontal Construction (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. (.5-8) 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 420 Engineering Economy. (3) 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) 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) 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) II. Prerequisites: BUS 303 or MGT 301 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) 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) 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) A. 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) II. Corequisites and/or prerequisites: CON 425, CON 426. A project-based capstone course in construction management for senior-level majors. This course will emphasize the integration of knowledge and skills acquired in previous undergraduate courses. 3 Lec/2 Lab.

COR—Correctional and Juvenile Justice Studies
Dr. Betsy Matthews, Coordinator

COR 201 Introduction to Corrections (3) A. Introduction to historical, philosophical, and operational frameworks of US corrections. Debates the goals of punishment and explores institutional and community-based sentencing options.

COR 302 Living and Working in Prison (3) A. Cross-listed as CRJ 302. Examines inmate subcultures