Wichita State University
NEW PROGRAM/MAJOR ROUTING SHEET

Program Title: **ENGINEERING TECHNOLOGY** Degree to be Offered: **B.S.**

A. Date Initiated by Faculty: July 2008

	Date	Signature	Approval*	Level (check as appropriate)
B.	_____	_____	Disapproved ☐ ☐ Approved	Department (if no committee exists, faculty member signs)
C.	_____	_____	Disapproved ☐ ☐ Approved	Department Chair
D.	_____	_____	Disapproved ☐ ☐Approved	College Curriculum Committee
E.	_____	_____	Disapproved ☐ ☐Approved	College Dean

Send to Associate Vice President for Academic Affairs and Research (who is responsible for curriculum matters) for preliminary review. The form will then be routed to the Senate or Graduate School.

UNDERGRADUATE PROPOSALS

F.	_____	_____	Disapproved ☐ ☐ Approved	Senate Academic Affairs Committee
G.	_____	_____	Disapproved ☐ ☐ Approved	Senate President

GRADUATE PROPOSALS

H.	_____	_____	Disapproved ☐ ☐ Approved	Graduate Council
I.	_____	_____	Disapproved ☐ ☐ Approved	Graduate Dean
J.	_____	_____	Disapproved ☐ ☐ Approved	Academic Vice President

***** All changes that are not approved are to be returned to the department chair and faculty with comments, including notification to the appropriate college dean(s).

K. The Academic Affairs and Research office will send the proposal to the Kansas Board of Regents office where new programs are reviewed by COCAO, COPS, and the Kansas Board of Regents. This process takes approximately four to six months.

L. Once approval has been received by the KBOR, the approval notice and copies of the signed original copies will be sent from the Academic Affairs and Research office to the following: Department Chair, Dean, Office of Institutional Research, and Registrar's Office.

M. The Vice President for Academic Affairs and Research then sends signed originals to the Assistant Registrar who reviews and records them on a computer.

N. Copies of the signed originals (proposal and routing sheet) will be sent by the Assistant Registrar to the Catalog Editor.

Comments:

INSTRUCTIONS FOR FILING A NEW PROGRAM/MAJOR:

Consult with the College of Engineering Dean and the Office of Academic Affairs and Research prior to developing a new program proposal.

Refer to Kansas Board of Regents guidelines for submitting proposals for new majors/programs: http://www.kansasregents.org/academic/policymanual.html.

Review Chapter II.D.7.a through d and Appendix G. Follow the narrative instructions for new program proposals.

Complete three forms, which can be downloaded from the Academic Affairs and Research website: http://webs.wichita.edu/?u=academicaffairs&p=/ndmforms/.

Send the new proposal, complete with curriculum vitae of involved faculty, electronically to the Vice President for Academic Affairs and Research or his/her associate who reviews curriculum proposals. New proposals will be submitted electronically to the Kansas Board of Regents.

I. BASIC PROGRAM INFORMATION

- Proposing institution: **Wichita State University (WSU) College of Engineering (CoE)**
- Title of proposed program: **Engineering Technology**
- Degree offered: **Bachelor of Science**
- Anticipated date of implementation: **Fall, 2011**
- Responsible department: **College of Engineering**
- The National Center for Education Statistics (NCES) Classification of Instruction Programs (CIP) code and definition associated with proposed new program: **15.0000 Engineering Technology, General**. A program that generally prepares individuals to apply basic engineering principles and technical skills in support of engineers engaged in a wide variety of projects. Includes instruction in various engineering support functions for research, production, and operations, and applications to specific engineering specialties (moved from 15.1101).

II. PROGRAM DESCRIPTION

A. Program Proposal Narrative

New technologies are emerging, and existing technologies are rapidly changing to meet the demand for clean and efficient use of resources. The impetus for this shift toward sustainable and renewable technology is universal, environmental, and economical in scale. Whatever the causes, the stronger focus on efficient use of materials and energy diversity necessitates that technologists be trained over a broadening range of skill sets; in particular, creating a green collar work force.

As technology becomes more challenging, complicated, and hands-on, the demand for technologists with higher skill sets and education increases. Educational institutions at all levels have been fraught with questions concerning how they are going to meet this demand and shortfall—it is the burden and expectation of higher education to provide solutions.

The purpose of this proposal is to address the need for a workforce of skilled engineering technology professionals who are well trained in the fields of aircraft maintenance technology, engineering technology management, mechatronics technology, and renewable energy technology—burgeoning and viable career fields within the local, state, and regional economies.

The proposed undergraduate program in Engineering Technology is based upon engineering technology fundamentals, engineering principals, instrumentation, hands-on activities, mathematics, physics, and practical design applications.

Students in the program will have the option of graduating with a Bachelor of Science in Engineering Technology (BSET) degree with a concentration in one of four areas:

- **B.S., Aircraft Maintenance Technology (AMT)**

  Aircraft Maintenance Technology will prepare students who have a desire or experience in aircraft maintenance to hone their skills in equipment maintenance and repair, operations, health and safety, blueprint reading, structural analysis and repair, and more. Students become "master" technologists in their field.

- **B.S., Engineering Technology Management (ETMgt)**

  Engineering Technology Management will prepare students who are on the ground floor of a company to become managers. This degree not only prepares students to manage people and other important assets, but provides a stronger understanding of management and its direct role in industry. Students will learn to manage people and resources, set budgets (budget management), build teams, and more.

- **B.S., Mechatronics Technology (MET)**

  Although Mechatronics Technology has been around since 1966 and is very popular in Asia and Europe, it is still fairly new to the United States. Mechatronics technology encompasses the applied synergies of mechanical, electrical, and computer technologies involving robotics, automated manufacturing and packaging, aircraft, heating and cooling systems, and renewable energy systems, to name a few.

- **B.S., Renewable Energy Technology (REN)**

  The Renewable Energy Technology program encompasses a wide range of electrical, mechanical, and computer topics necessary to prepare students to compete in the emerging field of renewable energies. Individuals will be prepared to perform economic analysis, evaluate environmental tradeoffs, and complete installation and maintenance projects in the following areas: sustainable power generation, sustainable energy utilization in the built environment, and solar energy. Typical job responsibilities will include design, testing, research and development, service, maintenance, and installation assignments.

The criteria used in the design of these four areas of concentrations were, first, to serve the intellectual and economic development needs of the surrounding Wichita metropolitan area, the state of Kansas, and the nation; and second, to offer a unique and truly interdisciplinary Engineering Technology program that takes advantage of synergizing the College of Engineering and the W. Frank Barton School of Business within Wichita State University. All four areas of concentration will fulfill local, state, and national workforce demands in the fields of aviation, manufacturing, energy, and healthcare.

The proposed academic program will contribute directly to the fulfillment of WSU's mission by providing educational opportunities in an area of need in the urban setting it serves. Moreover, this

program will equip students with the tools they need to thrive in a complex world. The proposal is aligned with the university's mission of "commitment to providing comprehensive educational opportunities in an urban setting," as well as the College of Engineering mission to provide more comprehensive degree offerings to "contribute to the social and economic well-being of citizens and organizations in the Wichita metropolitan area, the state of Kansas, and beyond." These programs bridge the current gap in offerings between technology two-year programs and the CoE Bachelor of Science offerings. The proposal addresses the recently presented "Foresight 2020," which has several goals. In particular, it addresses "Strategic Goal #5, Enhance alignment between the work of the state's higher education system and the needs of the Kansas economy," by aligning community college students and the need for a BSET program by Kansas employers. This proposal addresses both workforce needs and increases the number of employable science, technology, engineering, and mathematics (STEM) graduates. Previous agreements with community colleges have not been as successful as possible due to the demanding rigor of an engineering degree. Many students in technology programs at the community-college level are ready for a calculus class but not ready for the complete calculus sequence required by an engineering degree. The Engineering Technology program requires a single calculus class, and many of these students previously receiving an AS degree can now be recruited to continue with a BSET degree. The BSET program successfully bridges the gap between the two-year degree and the four-year degree for these students. Employers are ready to employ these graduates, and the BSET program will provide these graduates.

The aging U.S. population offers numerous challenges. The U.S. Census Bureau anticipates a dramatic shift in U.S. demographics within the next 20 years. In that time, the number of elderly individuals in the U.S will expand by 75 percent to 74.6 million people (*U.S. Aging*, 2004).

"With the Green Jobs Act, $125 million a year will be made available across the country to begin training workers for jobs in the clean energy sector," remarked Rep. John Tierney, D-Mass., who co-wrote the Green Jobs Act. "Thirty-five thousand people per year can benefit from vocational education that will provide for them secure employment in this country."

In addition to an aging workforce, rapid technological advancements and highly competitive global markets are changing the face of the aviation workforce and technologically reliant industries based throughout the Wichita metropolitan area and South Central Kansas. With this in mind, the Wichita State University College of Engineering has been very aggressive and strategic in researching and developing new and innovative strategies to meet stakeholders' educational, technological, and workforce needs and demands resulting in synergistic degree program development.

Currently, within the Wichita metropolitan area, advanced technology bachelor degree programs are non-existent. Current high school and/or community college technology students wishing to further their

education by obtaining a B.S. in engineering technology degree at a four-year university find themselves forced to transfer to a college/university outside of the Wichita metropolitan area or out-of-state. The loss of these potential students economically drains funding for WSU, the College of Engineering and the city of Wichita. Furthermore, these obstacles can prevent or detour students from furthering their technological education, thereby diluting the high-skill knowledge base required for the local and regional industries.

Wichita State University's proposed Bachelor of Science in Engineering Technology program and its four options—Aircraft Maintenance Technology, Engineering Technology Management, Mechatronics Technology, and Renewable Energy Technology—would help resolve these issues by presenting current and future technology students with the opportunity to complete their four-year BSET degree at WSU and give employers the opportunity to provide career growth opportunities for current employees. This degree program would also provide certified Federal Aviation Administration Airframe/Powerplant (FAA A/P) employees and students with the opportunity to matriculate to WSU and complete the last three years of their engineering technology degree.

To determine the needed technological skills of college graduates, and assess current and future hiring trends, meetings were scheduled with various aviation industry representatives who could possibly employ graduates from the proposed WSU technology programs. From these meetings, it was determined that graduates would benefit industry by taking course topics as indicated in Table 1.

TABLE 1. COURSE TOPICS RECOMMENDED BY INDUSTRY REPRESENTATIVES

• Mechanics (Mechanical) • Electronics (Electrical) • Avionics • Aircraft Systems • Team Coaching and Development • Global Perspectives • Cultural Perspectives • Corporate Etiquette • Basic Fluids • Wiring and Routing • Engine Theory • Reliability	• Hydraulics • Controls • Environmental Systems • Software Development • Data Collection • Composite Repair • Non-Destructive Testing • Blueprint/Schematic Reading • Trouble Shooting • CATIA • Technical Writing

As part of the overall educational experience, students may participate in professional organizations, take part in multicultural experiences, perform community-based service, conduct undergraduate research, and receive cooperative/summer internship experience. Like all other undergraduate students enrolled in the College of Engineering, students in the Engineering Technology

program will be expected to complete the requirements of the Engineer of 2020 program (see p. 42). Engineering Technology students will conduct their undergraduate research by selecting it as an option under the Engineer 2020 program.

The core skills and knowledge gained by students in the Engineer Technology program include the following:

- Knowledge of engineering technology fundamentals.
- Knowledge of calculus-based mathematics and experimental statistics.
- Ability to communicate with and work in teams of other engineers, designers, and technicians.
- Understanding of problem-solving approaches used by technologists.
- Understanding of economics, safety considerations, and ecological, societal, legal, and global impacts in the design process.
- Ability to proceed from a problem definition to a solution in the design process.
- Knowledge of principles that form the major field of Engineering Technology.

B. Program Demand, Job Outlook, Student Characteristics, and Need and Comparative/Local Advantage

Program Demand

Often referred to and regarded as the "Air Capital of the World," Wichita is the global leader of aerospace manufacturing and design. According to a Milken Institute study, Wichita has the highest concentration of aerospace manufacturing employment and skills in the nation. Aerospace is the engine that generates new wealth and job creation in the local, regional, and state economies. Due to significant growth in defense-related aircraft orders, Wichita's ranking in the Milken's Institute 2010 Best-Performing Cities Index, 200 Metropolitan Cities, continues to climb, jumping 117 spots, from 189th in 2006 to 72nd in 2010 (http://bestcities.milkeninstitute.org/bestcities2010.taf?rankyear=2010&type=rank200).

In preliminary discussions with local aviation industry representatives, it was voiced that employees who hold an associate's degree or FAA A/P certificate may desire to advance in their careers but have minimal educational options available in the Wichita metropolitan area to do so. With the absence of advanced technology degree programs, employees and students may refrain from further education, pursue online degree options, transfer to a college outside of Wichita, or pursue degree programs that will not contribute to addressing the skilled workforce shortage.

According to the Kansas Aerospace Industry Forecast by Kansas, Inc., "Kansas aerospace relies primarily on commercial aviation parts manufacturing, defense aerospace manufacturing, avionics manufacturing, and general aviation manufacturing, as well as a significant number of suppliers to all of

the industry sub-sectors. The companies include many familiar names such as Spirit AeroSystems, Boeing Integrated Defense Systems, Garmin International, Honeywell, Raytheon (Hawker Beechcraft), Bombardier-Learjet and Cessna."

For 2008, 27 percent of this workforce was eligible for retirement, and over the next five years, 40 percent will be eligible (http://www.sedgwickcounty.org/workforce_development/). Therefore, in order for the aviation industry in Kansas to remain globally competitive, it is imperative that the community (and WSU) provide a skilled and accessible workforce.

Job Outlook

"Aviation companies need at least 5,000 skilled workers and an additional 1,000 trained workers each year for the next 10 years (http://www.sedgwickcounty.org/workforce_development/)." According to the Kansas Occupational Outlook report by the Kansas Department of Labor (KDOL), it is projected that "total employment for Kansas will grow from 1,468,555 in 2006 to 1,644,158 in 2016, an increase of 12.0 percent. The demand for Engineering Managers is expected to have the most total openings for jobs usually requiring a bachelor's or higher degree, plus work experience, with an increase of 17.4 percent." Additionally, "Kansas had 20,047 primary green jobs and 26,380 support green jobs in 2009. This was equivalent to 1.5 percent and 1.9 percent, respectively, of Kansas' total covered employment in the fourth quarter of 2008." Moreover, "in 2009, the renewable energy industry supported 1,204 direct and indirect renewable energy jobs in Kansas, comprised of 114 from bioenergy, 1,057 from wind energy, and 33 from hydroelectric. Green employment is expected to see an increase of 56.9 percent in energy efficiency, 37.5 percent in clean transportation and fuels, 32.7 percent in agriculture and natural resource conservation, and 25.7 percent in pollution prevention and environmental cleanup" (2009 Kansas Green Jobs Report).

The KDOL's 2006-2016 Top Ten Occupations with Highest Absolute Change projects a 27.1 percent (3,563 to 4,529) increase for Aircraft Mechanics and Service Technicians with a medium hourly wage of $25.68. This report also projects that between 2006 and 2016, the South Central region of Kansas will experience job growth of 30,337 (7.6 percent). Within the confines of this growth pattern, one of "the fastest growing industries is Transportation Equipment Manufacturing, which includes Aerospace Production."

Furthermore, according to the KDOL's 2008, Second Quarter Wage Vacancy Survey, "there were 5,810 (6.3 percent) jobs available in *transportation and materials moving (includes aerospace)*, 2,536 (4.4 percent) in *management*, and 1,232 (4.8 percent) in *architecture and engineering*." Nationally, from 2006 to 2016, the Bureau of Labor and Statistics (BLS) forecasts a 10 percent (8,500 to 9,400) growth for aerospace engineering and operations technicians.

Student Characteristics

With the target market of the four engineering technology tracks aimed at community/technical college students, Wichita State University's College of Engineering requested disaggregated student profile data from Butler Community College (BCC), Cowley Community College (CCC), Hutchinson Community College (HCC), and Wichita Area Technical College (WATC) for the 2007–08 academic year (summer, fall, spring). Data was requested on students enrolled in one of the following technology related programs: *Composites, Aerospace, Aerostructures, Airframe Mechanic/Aircraft Maintenance Technology, Drafting and Design Technology, Electrical Engineering Technology, Machine Shop Technology, Machine Tool Technology, Mechanical Engineering Technology, Mechatronics,* or *Pre-engineering*. With the exception of CCC, all schools volunteered to provide the requested data. However, aggregated student profile data was obtained on CCC from the National Center for Education Statistics web site.

From this data, it was determined that approximately 1,108 students were enrolled in one of the aforementioned technology programs. Of those students, 637 were enrolled full-time with an average GPA of 2.97 and a median age of 27.8. And of these, 531 were completers, with 502 graduating from WATC. Due to new program start-ups, WATC was unable to provide complete data for students enrolled in Composites, Aerostructures, and Airframe Mechanic/Aircraft Maintenance Technology programs. Complimenting these numbers, the Sedgwick County Technical Education & Training Authority (SCTE & TA) projects that at least 1,200 aviation and 1,800 general manufacturing graduates per year will graduate from the National Center for Aviation Training (NCAT), which opened its doors August 2010 (http://www.gwedc.org/site selection-key industries-manufacturing.php). This is in addition to the approximately 5,200 high school graduates that are produced annually in Sedgwick County alone (Greater Wichita Economic Development Coalition, Wichita Region Manufacturing Labor Force Overview).

Need and Comparative/Local Advantage

For nearly 90 years, aircraft and aircraft components have been built with Wichita expertise and craftsmanship, which offers one of the largest aerospace labor pools and supplier networks in the world. Wichita is also home to an Airbus Engineering Design Center. "In 2005, Wichita companies delivered 55% of all general aviation aircraft built in the United States, and accounted for 44% of global general aviation deliveries. Located in Wichita is some of the most specialized equipment in the world for metal and composite material fabrication. Decades of aircraft production have built a comprehensive network of over 200 precision machine shops, tool and die shops, and other aerospace subcontract manufacturers (www.gwedc.org)."

"There are more than 40 Boeing-certified gold and silver suppliers within a 200-mile radius. Those leading edge suppliers include Spirit AeroSystems, the world's largest independent producer of commercial aircraft structures and systems. Wichita firms either directly manufacture, or provide critical components for, over half of all general aviation, commercial and military aircraft. Wichita's history in aviation has positioned its state and federal elected officials well to protect and advance critical legislation (www.gwedc.org)."

Of the 283.4 thousand employed in Wichita, over 31 thousand (11 percent) are employed in the manufacturing or engineering industry (*Wichita Business Journal*, September 17, 2010, pp. 8, 15, and 17). Kansas' tenth place ranking in *Forbes* new "Best States for Business" list and the No. 11 ranking in CNBC's annual "America's Top States for Business" report make Wichita a very attractive environment for business development and future job growth (www.KansasCommerce.com).

Nationally, the American Society of Engineering Education (ASEE) reported that during Fall 2009, there were 25,349 students enrolled in 92 colleges/universities granting Bachelor of Science in Engineering Technology degrees. From this number, 11 institutions were Accreditation Board for Engineering and Technology-Technology Accreditation Commission (ABET-TAC)-accredited BSET programs located in the Midwest region that includes Kansas, Missouri, Nebraska, and Illinois; 20 in the South Central region that includes Arkansas, Louisiana, Oklahoma, and Texas; and four in the West Central region that includes Colorado and Idaho. Figure 1 shows the national Engineering Technology enrollment by discipline as of Fall 2007.

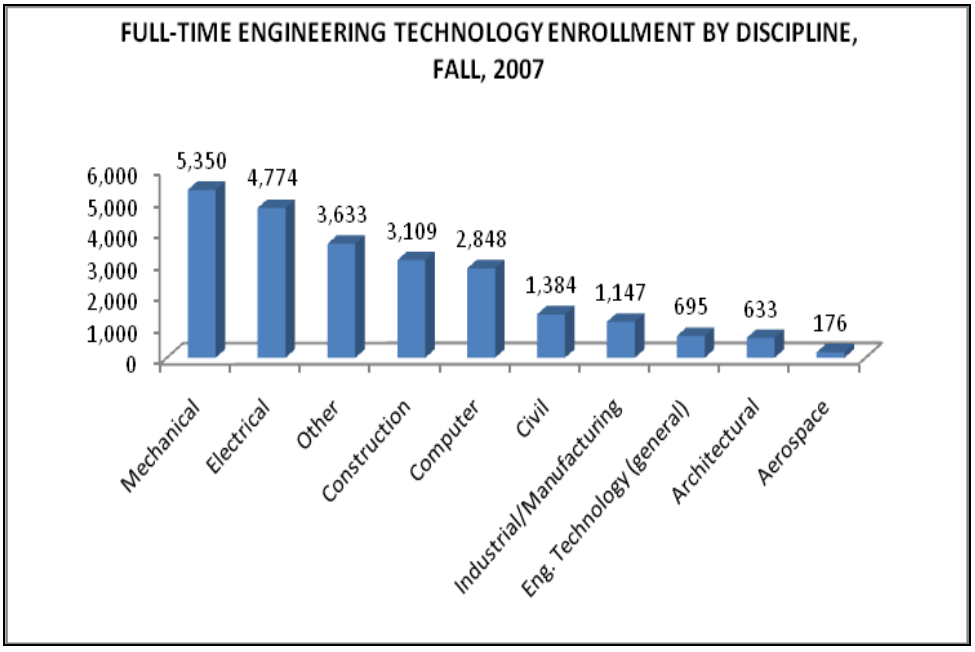

Figure 1. National Engineering Technology Enrollment by Discipline (ASEE, 2007).

Student enrollment at Pittsburg State University and Kansas State University engineering technology programs averaged 73.5 students (FTE) in Fall 2007; this is compared to the national average of 264 students per year (ASEE). Based on Wichita's strong aerospace presence and labor force, WSU forecasts enrollment of 75 students per year following the three-year program initiation. This will equate to approximately 2,250 credit hours per year. A summary of B.S.-level Engineering Technology offerings in the state and in the region is shown in Table 2.

TABLE 2. B.S.-LEVEL ENGINEERING TECHNOLOGY PROGRAMS FOR KANSAS UNIVERSITIES AND REGIONAL STATE-SUPPORTED UNIVERSITIES

UNIVERSITY	ENGINEERING TECHNOLOGY PROGRAMS
University of Kansas	None applicable
Kansas State University-Salina	Construction Engineering Technology, Electronic and Computer Engineering Technology (Mechatronics option), Civil Engineering Technology, Mechanical Engineering Technology, Aircraft Powerplant Technology, and Aviation Maintenance Technology
Pittsburg State University	Construction Engineering Technology, Electronics Engineering Technology, Manufacturing Engineering Technology, Mechanical Engineering Technology, and Plastics Engineering Technology
Northern Illinois University	Industrial Management and Technology, Electrical Engineering Technology, Manufacturing Engineering Technology, and Aviation Management
Oklahoma State University	Construction Management Technology, Electrical Engineering Technology, and Mechanical Engineering Technology
Bradley University	Manufacturing Engineering Technology
Indiana University—Purdue University, Fort Wayne	Construction Engineering Technology, Industrial Engineering Technology, Manufacturing Engineering Technology, Mechatronics Engineering Technology, and Mechanical Engineering Technology

Wichita State University is a relatively small research-intensive university. One advantage associated with small organizations is flexibility. This flexibility helps to ensure the success of the interdisciplinary approach to the development of the curriculum, development of course and laboratory materials, team teaching of courses, and administration of the program. WSU's metropolitan location provides many opportunities to interact with aviation, manufacturing, healthcare, renewable energy, and many other related industries.

Student diversity plays a critical role in WSU's College of Engineering. For example, out of 179 students graduating from WSU's CoE in 2009, 29 (16 percent) were women and 52 (29 percent) were foreign nationals (Profiles of Engineering and Engineering Technology Colleges, ASEE, 2009 Edition). With the CoE's addition of the Director of Programs to Broaden Participation in Engineering, enrollment

of women, foreign students, and non-Caucasian ethnic groups is anticipated to further increase. The ASEE's Profiles of Engineering and Engineering Technology Colleges, 2009 Edition, reports the total percentage of BSET degrees awarded to women in 2009 was 9.4 percent, with an additional 29.5 percent awarded to various non-Caucasian graduates of both genders.

C. Administrative Responsibility

The administrative responsibility and application process of the Engineering Technology program will reside in the College of Engineering. However, given the program's interdisciplinary nature, the organization and management of the program will not be the same as in other established CoE departments. An organizational chart describing the administrative structure is provided in Figure 2.

The ***Program Coordinator*** will be a half-time position. The Program Coordinator will be responsible for all activities related to the administration and coordination of the program, including admitting and advising students, chairing the curriculum committee, preparing program accreditation, acting as liaison to program constituents, and representing the program on the CoE Executive Committee. The Program Coordinator will have a ***Secretary*** dedicated to program activities and will work with members of the Executive Committee to coordinate course scheduling and faculty assignments.

The program's ***Advisory Board*** will be composed of the deans of the two participating colleges—Engineering and Business. The Advisory Board will provide oversight and set policy guidelines for the program. The Industrial Advisory Board will provide guidance to the Advisory Board on matters related to the direction of the program and curriculum, and assessment of program outcomes for the ABET-TAC. They will also act as liaisons with industry in setting up and arranging for internships and cooperative education experience.

Some of the current faculty will support the Engineering Technology program, and new faculty designated as Engineering Technology faculty will have term appointments. Designated Engineering Technology ***Program Faculty*** will be responsible for Engineering Technology student advising, course and laboratory development, and services related to the Engineering Technology program.

The Engineering Technology ***Curriculum Committee*** will be chaired by the Program Coordinator and composed of all program faculty members. The Curriculum Committee will have responsibility for the design and implementation of the curriculum, and ensure that the curriculum adheres to an interdisciplinary structure within the parameters of accreditation requirements.

The Engineering Technology ***Program Executive Committee*** will consist of chairpersons of all departments involved in the program. The Program Executive Committee will be responsible for allocation responsibilities and resources for the faculty and efficient conduct of lecturers and laboratories. They will work with the Program Coordinator.

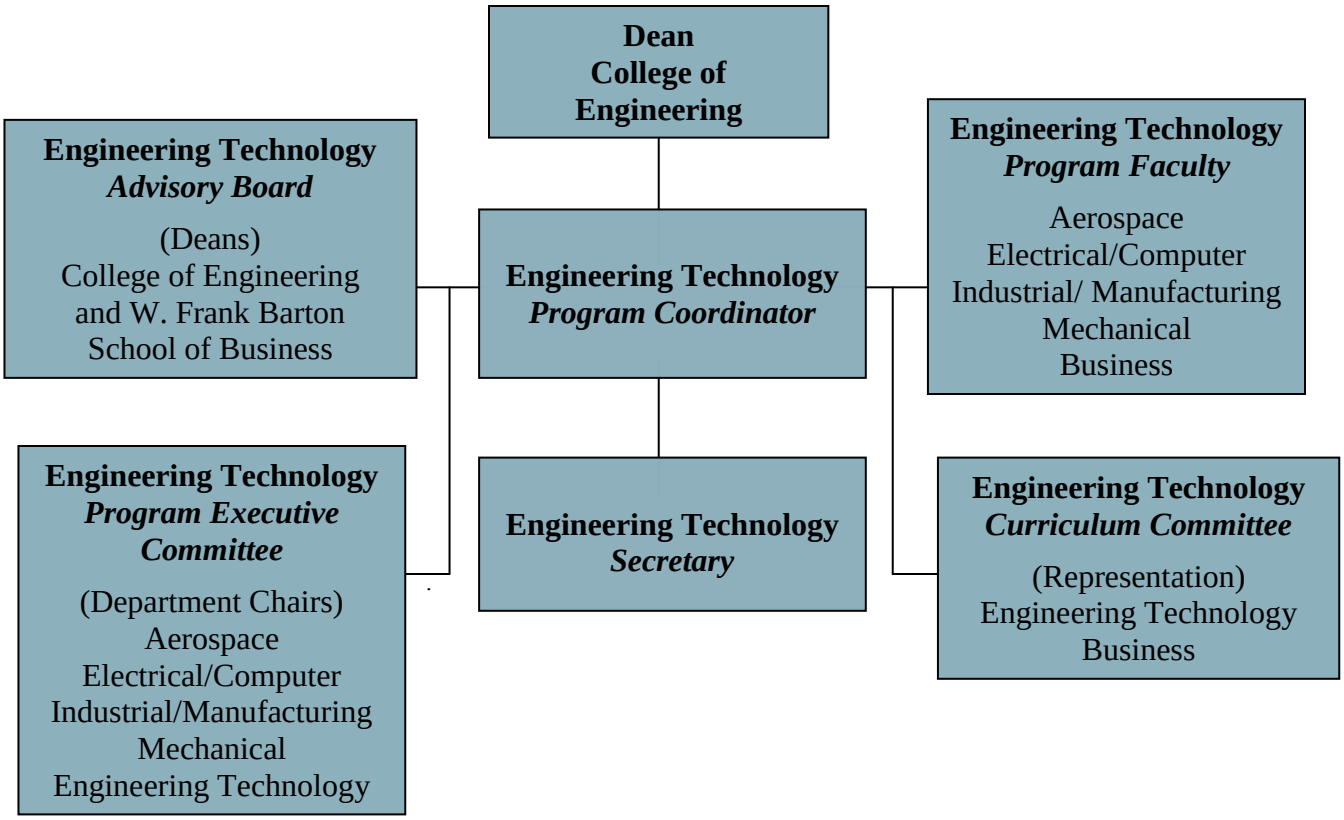

Figure 2. Engineering Technology Administrative Structure.

D. Application Process and Admissions Criteria

"The process of applying to the program and qualifying for admission are the same as those already established for the university and the College of Engineering" (Wichita State University Undergraduate Student Catalog 2008–2009, http://www.collegesource.org).

E. Curriculum of Proposed Program

Proposed Engineering Technology Program in the College of Engineering

The proposed Engineering Technology program includes various hands-on laboratory classes that focus on current issues in the application of engineering principles, preparing students for practical design and production work, rather than for jobs that require more theoretical and scientific knowledge.

Main Features of the 131-Minimum-Credit Engineering Technology Undergraduate Program Curriculum

- 64 transferable credits from a community college or technical school including the following:
  - 6 credits of English Composition
  - 3 credits of Public Speaking

    - 6 credits of Math above Pre-Calculus and Trigonometry
    - 3 credits of Fine Arts
    - 6 credits of Humanities
    - 6 credits of Social/Behavioral Science
    - 3 credits of Natural Science
    - 6 credits of Fine Arts, Humanities, Social/Behavioral Science, or Mathematics and Natural Sciences
    - 18 credits of general elective courses that enable a student to graduate with a broad background in engineering technology with a focus in one of four areas of emphasis: Aircraft Maintenance Technology, Engineering Technology Management, Mechatronics Technology, or Renewable Energy Technology.
- 28 credits of core Engineering Technology courses
- 39 minimum credits of major requirements

A listing of courses in each of the four areas of emphasis follows, and a detailed curriculum by semesters is provided in Table 3. Courses indicated with XXX are new courses.

CURRICULUM OUTLINE
NEW DEGREE PROPOSALS
Kansas Board of Regents

I. Identify the new degree: ***Aircraft Maintenance Technology***
II. Provide courses required for each student in the major:

	Course Name and Number	Credit Hours
Core Courses:	CS 211 Problem Solving and Programming in C	4
	ENGT XX2 Applied Mechanics: Statics and Dynamics	3
	ENGT 3XX Introduction to Engineering Technology	3
	ENGT 4X1 Senior Project I	3
	ENGT 4X2 Senior Project II	3
	IME 222 Engineering Graphics	3
	IME 254 Engineering Probability and Statistics I	3
	IME 255 Engineering Economy	3
	IME 258 Manufacturing Methods and Materials I	3
Major Requirements:	ENGL 210 Composition: Business, Professional, and Technical Writing	3
	ENGT XX6 Maintenance Regulations and Practices	2
	ENGT XX7 Aircraft Engines	3
	ENGT XX9 Industrial Controls and Instrumentation	3
	ENGT X12 Aerodynamics and Performance	2
	ENGT X13 Introduction to Strength and Mechanics of Materials	3
	ENGT X14 Avionics Systems	3
	ENGT X15 Aircraft Structures and Systems	3
	ENGT X16 Aircraft Damage Analysis and Repair	3
	ENGT X17 Non-Destructive Testing	3
	ENGT X21 Material Applications in Engineering	3
	ENGT X22 Material Applications in Engineering Lab	1
	ENGT X23 Aviation Safety and Security	2
	ENGT X24 Aircraft Fatigue and Fracture Mechanics	3
	ENGT X25 Aircraft Reliability, Maintainability, and Supportability	3
	ENGT X26 Aircraft Propulsion Systems	2
	ENGT 2XX Circuits Technology	4
	PHIL 385 Engineering Ethics	3
	Total	**77**

CURRICULUM OUTLINE
NEW DEGREE PROPOSALS
Kansas Board of Regents

I. Identify the new degree: ***Engineering Technology Management***

II. Provide courses required for each student in the major:

	Course Name and Number	Credit Hours
Core Courses:	CS 211 Problem Solving and Programming in C	4
	ENGT XX2 Applied Mechanics: Statics and Dynamics	3
	ENGT 3XX Introduction to Engineering Technology	3
	ENGT 4X1 Senior Project I	3
	ENGT 4X2 Senior Project II	3
	IME 222 Engineering Graphics	3
	IME 254 Engineering Probability and Statistics I	3
	IME 255 Engineering Economy	3
	IME 258 Manufacturing Methods and Materials I	3
Major Requirements:	ACCT 210 Financial Accounting	3
	ACCT 220 Managerial Acctg.	3
	BLAW 431 Legal Environment of Business	3
	ECON 202 Principles of Microeconomics	3
	ENGL 210 Composition: Business, Professional, and Technical Writing	3
	ENGR 301 The Engineer as Leader	3
	ENGT XX4 Engineering Technology Management	3
	ENGT XX5 Analysis of Decision Processes in Technology	3
	FIN 340 Financial Management I	3
	IB 333 International Business	3
	MGMT 360 Management and Organizational Behavior	3
	MKT 300 Marketing	3
	PHIL 385 Engineering Ethics	3
	Total	**67**

CURRICULUM OUTLINE
NEW DEGREE PROPOSALS
Kansas Board of Regents

I. Identify the new degree: ***Mechatronics Technology***

II. Provide courses required for each student in the major:

	Course Name and Number	Credit Hours
Core Courses:	CS 211 Problem Solving and Programming in C	4
	ENGT XX2 Applied Mechanics: Statics and Dynamics	3
	ENGT 3XX Introduction to Engineering Technology	3
	ENGT 4X1 Senior Project I	3
	ENGT 4X2 Senior Project II	3
	IME 222 Engineering Graphics	3
	IME 254 Engineering Probability and Statistics I	3
	IME 255 Engineering Economy	3
	IME 258 Manufacturing Methods and Materials I	3
Major Requirements:	ECE 194 Introduction to Digital Design	4
	ECE 238 Assembly Language Programming for Engineers	3
	ECE 394 Introduction to Computer Architecture	3
	ENGL 210 Composition: Business, Professional, and Technical Writing	3
	ENGT XX8 Machine Elements	3
	ENGT XX9 Industrial Controls and Instrumentation	3
	ENGT X10 Robotics Technology	3
	ENGT X11 Microcomputer-Based Mechanical Systems	3
	ENGT X13 Introduction to Strength and Mechanics of Materials	3
	ENGT X18 Introduction to Fluids	3
	ENGT 2XX Circuits Technology	4
	ENGT 4XX Electrical Power and Machinery	4
	PHIL 385 Engineering Ethics	3
	Total	**70**

CURRICULUM OUTLINE
NEW DEGREE PROPOSALS
Kansas Board of Regents

I. Identify the new degree: ***Renewable Energy Technology***

II. Provide courses required for each student in the major:

	Course Name and Number	Credit Hours
Core Courses:	CS 211 Problem Solving and Programming in C	4
	ENGT XX2 Applied Mechanics: Statics and Dynamics	3
	ENGT 3XX Introduction to Engineering Technology	3
	ENGT 4X1 Senior Project I	3
	ENGT 4X2 Senior Project II	3
	IME 222 Engineering Graphics	3
	IME 254 Engineering Probability and Statistics I	3
	IME 255 Engineering Economy	3
	IME 258 Manufacturing Methods and Materials I	3
Major Requirements:	ENGL 210 Composition: Business, Professional, and Technical Writing	3
	ENGT XX1 Renewable/Sustainable Engineering Technology—Project Course	
	ENGT X18 Introduction to Fluids	3
	ENGT X1X Solar Engineering	3
	ENGT X2X Fluid Power Technology	3
	ENGT X3X Renewable Energy Management	3
	ENGT 2XX Circuits Technology	3
	ENGT 4XX Electrical Power and Machinery	4
	ENGT 46X Applied Fluid Mechanics	3
	ENGT 47X Renewable Energy Technology	3
	ENGT 48X Energy, the Environment, and Sustainability	3
	ENGT 49X Sustainable Power Generation	3
	ENGT 50X Sustainable Heating, Ventilating, and Air Conditioning (HVAC)	3
	ME 398 Thermodynamics 1	3
	ME 469 Energy Conversion	3
	PHIL 385 Engineering Ethics	3
	Total	**77**

TABLE 3. CONCENTRATION CURRICULUM BY SEMESTERS

Aircraft Maintenance Technology Program Curriculum—2+3

Freshman Semester				Sophomore Semester		Junior Semester		Senior Semester	
Fall	**Spring**	**Fall**	**Spring**	**Fall**	**Spring**	**Fall**	**Spring**	**Fall**	**Spring**
FAA AP course	FAA AP course	FAA AP course	FAA AP course	MATH 123 Trigonometry (3) P: see catalog	MATH XXX Tech. Calc. (5) P: MATH 123, see catalog	ENGT 3XX Intro. to Eng. Tech. (3) P: Jr. standing	ENGT X21 Mat. Apps in Eng. (3) ENGT X22 Mat. Apps in Eng. Lab (1) 2L P: CHEM 211 and MATH XXX; C: ENGT X22L	ENGT X25 Aircraft Reliability, Main. and Support. (3) P: ENGT X15	ENGT X14 Avionics Systems (3) P: ENGT X15 and ENGT 2XX
FAA AP course	FAA AP course	FAA AP course	FAA AP course	Fine Arts Intro. Course (3)	PHYS 213 Gen. Physics I (5) 4R; 3L P: MATH 112, see catalog	ENGT XX2 Applied Mech.: Statics and Dynamics (3) P: MATH XXX	ENGT X23 Aviation Safety and Security (2) P: Jr. standing	IME 254 Engineering Probability and Statistics I (3) P: MATH XXX	ENGT X12 Aerodynamics and Performance (2) P: ENGT XX2
FAA AP course	FAA AP course	FAA AP course	FAA AP course	Social and Behavioral Science Intro. Course (3)	Social and Behavioral Sciences FS Course (3)	ENGL 210 Comp.: Bus., Prof., and Tech. Writing (3) P: ENGL 101 and 102	ENGT X15 Aircraft Structures and Systems (3) P: ENGT X21	ENGT XX6 Maintenance Regulations and Practices (2) P: ENGT 3XX	ENGT X17 Non-Destructive Testing (3) P: ENGT X22 and ENGT X13
FAA AP course	FAA AP course	FAA AP course	FAA AP course	COMM 111 Public Speaking (3)	Humanities Intro. Course (3)	IME 258 Mfg. Meth. and Mat. I (3) P: MATH 123	ENGT XX7 Aircraft Engines (3) 2R; 2L P: ENGT X12	ENGT 4X1 Senior Project I (3) P: Eng. Tech. Sr. standing	ENGT 4X2 Senior Project II (3) P: ENGT 4X1
FAA AP course	FAA AP course	FAA AP course	FAA AP course	ENGL 101 College Eng. I (3) P: ENGL 013 or Placement Exam	ENGL 102 College Eng. II (3) P: ENGL 101	IME 255 Engineering Economy (3) P: MATH XXX	ENGT X13 Introduction to Strength and Mechanics of Materials (3) P: ENGT XX2	ENGT X24 Aircraft Fatigue and Fracture Mech. (3) P: ENGT X21 and DS 350	ENGT X26 Aircraft Propulsion Systems (2) P: ENGT XX2 and ECE 138
FAA AP course	FAA AP course	FAA AP course	FAA AP course	CHEM 211 Gen. Chem. I (5) 3R; 4L P: see catalog		PHIL 385 Engineering Ethics (3) P: Jr. standing	ENGT XX9 Indust. Cntrls. and Inst. (3) P: ENGT 2XX and MATH XXX or equiv.	ENGT X16 Aircraft Damage Analysis and Repair (3) P: ENGT X21	ENGT 2XX Circuits Technology (4) P: MATH 111; ENGT 2XXL
						IME 222 Eng. Graphics (3) P: MATH 123 or equiv.		CS 211 Prob. Solving and Prog. in C (4) P: ENGL 101, MATH 111, 112 or equiv. with a C or better in each	
Total: 15-18	**Total: 15-18**	**Total: 15-18**	**Total: 15-18**	**Total: 20 hrs**	**Total: 19 hrs**	**Total: 21 hrs**	**Total: 18 hrs**	**Total: 21 hrs**	**Total: 17 hrs**

TABLE 3. CONCENTRATION CURRICULUM BY SEMESTERS (continued)

Aircraft Maintenance Technology Program Curriculum—CC Transfer

Freshman Semester		Sophomore Semester		Junior Semester		Senior Semester	
Fall	**Spring**	**Fall**	**Spring**	**Fall**	**Spring**	**Fall**	**Spring**
College Algebra (3)	Trigonometry (3)	Calculus I (5)	Elective (3)	ENGT 3XX Intro. to Eng. Tech. (3) P: Jr. standing	ENGT X21 Mat. Apps in Eng. (3) ENGT X22 Mat. Apps in Eng. Lab (1) 2L P: CHEM 211 and MATH XXX; C: ENGT X22L	ENGT X25 Aircraft Reliability, Main. and Support (3) P: ENGT X15	ENGT X14 Avionics Systems (3) P: ENGT X15 and ENGT 2XX
Gen. Chem. I (4)		Gen. Physics I (4)	Fine Arts Course (3)	ENGT XX2 Applied Mech.: Statics and Dynamics (3) P: MATH XXX	ENGT X23 Aviation Safety and Security (2) P: Jr. standing	IME 254 Engineering Probability and Statistics I (3) P: MATH XXX	ENGT X12 Aerodynamics and Performance (2) P: ENGT XX2
Gen. Chem. I (1)	Philosophy Intro. Course (3)	Gen. Physics I (1)		ENGL 210 Comp.: Bus., Prof., and Tech. Writing (3) P: ENGL 101 and 102	ENGT X15 Aircraft Structures and Systems (3) P: ENGT X21	ENGT XX6 Maintenance Regulations and Practices (2) P: ENGT 3XX	ENGT X17 Non-Destructive Testing (3) P: ENGT X22 and ENGT X13
Elective (3)	Public Speaking (3)	Elective (3)	Elective (3)	IME 258 Mfg. Meth. and Mat. I (3). P: MATH 123	ENGT XX7 Aircraft Engines (3) 2R; 2L P: ENGT X12	ENGT 4X1 Senior Project I (3) P: Eng. Tech. Sr. standing	ENGT 4X2 Senior Project II (3) P: ENGT 4X1
Social and Behavioral Sciences Intro. Course (3)	Elective (3)	Social and Behavioral Sciences Course (3)	Humanities Intro. Course (3)	IME 255 Engineering Economy (3) P: MATH XXX	ENGT X13 Introduction to Strength and Mechanics of Materials (3) P: ENGT XX2	ENGT X24 Aircraft Fatigue and Fracture Mech. (3) P: ENGT X21 and DS 350	ENGT X26 Aircraft Propulsion Systems (2) P: ENGT XX2 and ECE 138
English Comp. 101 (3)	English Comp. 102 (3)		Elective (3)	PHIL 385 Engineering Ethics (3) P: Jr. standing	ENGT XX9 Indust. Cntrls. and Inst. (3) P: ENGT 2XX and MATH XXX or equiv.	ENGT X16 Aircraft Damage Analysis and Repair (3) P: ENGT X21	ENGT 2XX Circuits Technology (4) P: MATH 111, ENGT 2XXL
				IME 222 Eng. Graphics (3) P: MATH 123 or equiv.		CS 211 Prob. Solving and Prog. in C (4) P: ENGL 101, MATH 111, 112 or equiv. with C or better in each	
Total: 17 hrs	**Total: 15 hrs**	**Total: 16 hrs**	**Total: 15 hrs**	**Total: 21 hrs**	**Total: 18 hrs**	**Total: 21 hrs**	**Total: 17 hrs**

TABLE 3. CONCENTRATION CURRICULUM BY SEMESTERS (continued)

Engineering Technology Management Program Curriculum—2+3

Freshman Semester				Sophomore Semester		Junior Semester		Senior Semester	
Fall	**Spring**	**Fall**	**Spring**	**Fall**	**Spring**	**Fall**	**Spring**	**Fall**	**Spring**
FAA AP course	FAA AP course	FAA AP course	FAA AP course	MATH 123 Trigonometry (3) P: see catalog	Tech. Calc (5) P: MATH 112, see catalog	ECON 202 Principles of Microeconomics (3) P: ECON 201	IME 258 Mfg. Meth. and Mat. I (3) P: MATH 123	MKT 300 Marketing (3) P: Jr. standing	PHIL 385 Engineering Ethics (3) P: Jr. standing
FAA AP course	FAA AP course	FAA AP course	FAA AP course	Fine Arts Intro. Course (3)	PHYS 213 Gen. Physics I (5) 4R; 3L P: MATH 112, see catalog	IME 254 Engineering Probability and Statistics I (3) P: MATH XXX	IME 255 Engineering Economy (3) P: MATH XXX	ENGT XX2 Applied Mech.: Statics and Dynamics (3) P: MATH XXX	BLAW 431 Legal Env. of Business (3) P: Jr. standing
FAA AP course	FAA AP course	FAA AP course	FAA AP course	Social and Behavioral Science Intro. Course (3)	ECON 201 Principles of Macroeconomics (3)	ACCT 210 Financial Acctg. (3) P: n/a	ENGL 210 Comp.: Bus., Prof., and Tech. Writing (3) P: ENGL 101 and 102	ENGT 4X1 Senior Project I (3) P: Eng. Tech. Sr. standing	ENGT 4X2 Senior Project II (3) P: ENGT 4X1
FAA AP course	FAA AP course	FAA AP course	FAA AP course	COMM 111 Public Speaking (3)		ENGT 3XX Intro. to Eng. Tech. (3) P: Jr. standing	ACCT 220 Managerial Acctg. (3) P: ACCT 210	FIN 340 Fin. Mgt. I (3) P: ACCT 210, Jr. standing, advanced standing	ENGT XX5. Analysis of Decision Processes in Technology (3) P: IME 254 and IME 255
FAA AP course	FAA AP course	FAA AP course	FAA AP course	ENGL 101 College Eng. I (3) P: ENGL 013 or Placement Exam	ENGL 102 College Eng. II (3) P: ENGL 101	IME 222 Eng. Graphics (3) P: MATH 123 or equiv.	IB 333 International Business (3) P: Jr. standing	ENGT XX4 Eng. Tech. Mgt. (3) P: IME 254 and IME 255	ENGR 301 The Engineer as Leader (3)
FAA AP course	FAA AP course	FAA AP course	FAA AP course			MGMT 360 Mgt. and Org. Behavior (3) P: Jr. standing, advanced standing	CS 211 Prob. Solving and Prog. in C (4) P: ENGL 101, MATH 111, 112 or equiv. with a C or better in each		
Total: 15-18	**Total: 15-18**	**Total: 15-18**	**Total: 15-18**	**Total: 15 hrs**	**Total: 16 hrs**	**Total: 18 hrs**	**Total: 19 hrs**	**Total: 15 hrs**	**Total: 15 hrs**

TABLE 3. CONCENTRATION CURRICULUM BY SEMESTERS (continued)

Engineering Technology Management Program Curriculum—CC Transfer

Freshman Semester		Sophomore Semester		Junior Semester		Senior Semester	
Fall	**Spring**	**Fall**	**Spring**	**Fall**	**Spring**	**Fall**	**Spring**
College Algebra (3)	Trigonometry (3)	Calculus I (5)	Elective (3)	ECON 202 Principles of Microeconomics (3) P: ECON 201	IME 258 Mfg. Meth. and Mat. I (3) P: MATH 123	MKT 300 Marketing (3) P: Jr. standing	PHIL 385 Engineering Ethics (3) P: Jr. standing
Elective (3)	Elective (3)	Gen. Physics I (4)	Fine Arts Course (3)	IME 254 Engineering Probability and Statistics I (3) P: MATH XXX	IME 255 Engineering Economy (3) P: MATH XXX	ENGT XX2 Applied Mech.: Statics and Dynamics (3) P: MATH XXX	BLAW 431 Legal Env. of Business (3) P: Jr. standing
Humanities Intro. Course (3)		Gen. Physics Lab I (1)		ACCT 210 Financial Acctg. (3) P: n/a	ENGL 210 Comp.: Bus., Prof., and Tech. Writing (3) P: ENGL 101 and 102	ENGT 4X1 Senior Project I (3) P: Eng. Tech. Sr. standing	ENGT 4X2 Senior Project II (3) P: ENGT 4X1
Elective (3)	Public Speaking (3)	Elective (3)	Elective (3)	ENGT 3XX Intro. to Eng. Tech. (3) P: Jr. standing	ACCT 220 Managerial Acctg. (3) P: ACCT 210	FIN 340 Fin. Mgt. I (3) P: ACCT 210, Jr. standing, advanced standing	ENGT XX5. Analysis of Decision Processes in Technology (3) P: IME 254 and IME 255
	Elective (3)	Macroeconomics (3)	Humanities Course (3)	IME 222 Eng. Graphics (3) P: MATH 123 or equiv.	IB 333 International Business (3) P: Jr. standing	ENGT XX4 Eng. Tech. Mgt. (3) P: IME 254 and IME 255	ENGR 301 The Engineer as Leader (3)
English Comp. 101 (3)	English Comp. 102 (3)		Elective (3)	MGMT 360 Mgt. and Org. Behavior (3) P: Jr. standing, advanced standing	CS 211 Prob. Solving and Prog. in C (4) P: ENGL 101, MATH 111, 112 or equiv. with a C or better in each		
Total: 15 hrs	**Total: 15 hrs**	**Total: 16 hrs**	**Total: 15 hrs**	**Total: 18 hrs**	**Total: 19 hrs**	**Total: 15 hrs**	**Total: 15 hrs**

TABLE 3. CONCENTRATION CURRICULUM BY SEMESTERS (continued)

Mechatronics Technology Program Curriculum—2+3

Freshman Semester				Sophomore Semester		Junior Semester		Senior Semester	
Fall	**Spring**	**Fall**	**Spring**	**Fall**	**Spring**	**Fall**	**Spring**	**Fall**	**Spring**
FAA AP course	FAA AP course	FAA AP course	FAA AP course	MATH 123 Trigonometry (3) P: see catalog	MATH XXX Tech. Calc. (5) MATH 123, see catalog	ENGT 3XX Intro. to Eng. Tech. (3)	PHIL 385 Engineering Ethics (3) P: Jr. standing	ENGT X18 Introduction to Fluids (3) 2R; 2L P: MATH XXX and ME 398	ENGT X10 Robotics Technology (3) P: ENGT XX9 or equiv.
FAA AP course	FAA AP course	FAA AP course	FAA AP course	Fine Arts Intro. Course (3)	PHYS 213 Gen. Physics I (5) 4R; 3L P: MATH 112, see catalog	IME 258 Mfg. Meth. and Materials I (3) 2R; 3L. P: MATH 123	ENGL 210 Comp.: Bus., Prof., and Tech. Writing (3) P: ENGL 101 and 102	ENGT XX8 Machine Elements(3) P: ENGT XX2 and ENGT X21	IME 255 Engineering Economy (3) P: MATH XXX
FAA AP course	FAA AP course	FAA AP course	FAA AP course	Social and Behavioral Science Intro. Course (3)	Social and Behavioral Sciences FS Course (3)	IME 254 Engineering Probability and Statistics I (3) P: MATH XXX	ECE 238 Assem. Lang. Prog. for Eng. (3) P: ECE 138	ENGT 4X1 Senior Project I (3) P: Eng. Tech. Sr. standing	ENGT 4X2 Senior Project II (3) P: ENGT 4X1
FAA AP course	FAA AP course	FAA AP course	FAA AP course	COMM 111 Public Speaking (3)	Humanities Intro. Course (3)	ECE 194 Intro. to Digital Design (4) P: MATH 111 or equiv.	ENGT 2XX. Circuits Technology (4) 3R; 3L P: ECE 138	ENGT XX9 Industrial Controls and Instrumentation (3) P: ENGT 2XX and MATH XXX	ENGT X11 Micro.-Based Mech. Sys. Tech.(3) 2R: 2L P: ENGT XX9
FAA AP course	FAA AP course	FAA AP course	FAA AP course	ENGL 101 College Eng. I (3) P: ENGL 013 or Placement Exam	ENGL 102 College Eng. II (3) P: ENGL 101	CS 211 Prob. Solving and Prog. in C (4) P: ENGL 101, MATH 111, 112 or equiv. with a C or better in each	ENGT XX2 Applied Mech.: Statics and Dynamics (3) P: MATH XXX	ENGT 4XX Elect. Power and Machinery (4) 3R; 3L P: ENGT 2XX and ENGL 102; C: ENGT 4XXL	ENGT X13 Intro. to Strength and Mech. Of Mat. (3) P: ENGT XX2
FAA AP course	FAA AP course	FAA AP course	FAA AP course	CHEM 211 Gen. Chem. I (5) 3R; 4L P: see catalog			IME 222 Eng. Graphics (3) P: MATH 133 or equiv.	ECE 394 Intro. to Computer Architecture (3) P: ECE 194; C: ECE 138	
Total: 15-18	**Total: 15-18**	**Total: 15-18**	**Total: 15-18**	**Total: 20 hrs**	**Total: 19 hrs**	**Total: 17 hrs**	**Total: 19 hrs**	**Total: 19 hrs**	**Total: 15 hrs**

TABLE 3. CONCENTRATION CURRICULUM BY SEMESTERS (continued)

Mechatronics Technology Program Curriculum—Cowley CC 2+3

Freshman Semester				Sophomore Semester		Junior Semester		Senior Semester	
Fall	**Spring**	**Fall**	**Spring**	**Fall**	**Spring**	**Fall**	**Spring**	**Fall**	**Spring**
CAP1516 Comp. Apps or Comp. Literacy (3)	ENG2211 Comp. I or COM2725 Interpersonal Comm. (3)	PHS4550 Gen. Physics I (3)	PSY6711 Gen. Psych. (3)	MATH 123 Trigonometry (3) P: see catalog	MATH XXX Tech. Calc. (5) P: MATH 123, see catalog	ENGT 3XX Intro. to Eng. Tech. (3)	PHIL 385 Engineering Ethics (3) P: Jr. standing	ENGT X18 Introduction to Fluids (3) 2R; 2L P: MATH XXX and ME 398	ENGT X10 Robotics Technology (3) P: ENGT XX9 or equiv.
INR3716 Tech. Math or higher (3)	PHO6460 Ethics (3)	MEC3480 Comp. Int. Mfg. (3)	INR3713 Applied Econ. (3)	Fine Arts Intro. Course (3)	PHYS 213 Gen. Physics I (5) 4R; 3L P: MATH 112, see catalog	IME 258 Mfg. Meth. and Materials I (3) 2R; 3L. P: MATH 123	ENGL 210 Comp.: Bus., Prof., and Tech. Writing (3) P: ENGL 101 and 102	ENGT XX8 Machine Elements(3) P: ENGT XX2 and ENGT X21	IME 255 Engineering Economy (3) P: MATH XXX
MEC3484 Industrial Elect. (3)	MEC3488 Mfg. Pro. and Sys. (3)	MEC3481 Digital Elect. (3)	MEC3490 Micropro. Inst. (3)	Social and Behavioral Science Intro. Course (3)	Social and Behavioral Sciences FS Course (3)	IME 254 Engineering Probability and Statistics I (3) P: MATH XXX	ECE 238 Assem. Lang. Prog. for Eng. (3) P: ECE 138	ENGT 4X1 Senior Project I (3) P: Eng. Tech. Sr. standing	ENGT 4X2 Senior Project II (3) P: ENGT 4X1
MEC3485 Industrial Elect. (3)	MEC3489 Mechanical Systems (3)	MEC3482 Electromech. Dev. (3)	MEC3487 Inst. Control Systems (3)	COMM 111 Public Speaking (3)	Humanities Intro. Course (3)	ECE 194 Intro. to Digital Design (4) P: MATH 111 or equiv.	ENGT 2XX. Circuits Technology (4) 3R; 3L P: ECE 138	ENGT XX9 Industrial Controls and Instrumentation (3) P: ENGT 2XX and MATH XXX	ENGT X11 Micro.-Based Mech. Sys. Tech.(3) 2R: 2L P: ENGT XX9
MEC3486 Indust. Sfty. and Lean Mfg. (3)	MEC3483 Fluid Power (3)	MEC3492 Prog. Logic Cntrl. (3)	MEC3493 Qlty. Cntrl. and Cost Mgt. (3)	ENGL 101 College Eng. I (3) P: ENGL 013 or Placement Exam	ENGL 102 College Eng. II (3) P: ENGL 101	CS 211 Prob. Solving and Prog. in C (4) P: ENGL 101, MATH 111, 112 or equiv. with a C or better in each	ENGT XX2 Applied Mech.: Statics and Dynamics (3) P: MATH XXX	ENGT 4XX Elect. Power and Machinery (4) 3R; 3L P: ENGT 2XX and ENGL 102; C: ENGT 4XXL	ENGT X13 Intro. to Strength and Mech. of Mat. (3) P: ENGT XX2
	MEC3491 Pneu. (3)		MEC3494 Robo. (3)	CHEM 211 Gen. Chem. I (5) 3R; 4L P: see catalog			IME 222 Eng. Graphics (3) P: MATH 133 or equiv.	ECE 394 Intro. to Computer Architecture (3) P: ECE 194; C: ECE 138	
Total: 15 hrs	**Total: 18 hrs**	**Total: 15 hrs**	**Total: 18 hrs**	**Total: 20 hrs**	**Total: 19 hrs**	**Total: 17 hrs**	**Total:19 hrs**	**Total: 19 hrs**	**Total: 15 hrs**

TABLE 3. CONCENTRATION CURRICULUM BY SEMESTERS (continued)

Mechatronics Technology Program Curriculum—CC Transfer

Freshman Semester		Sophomore Semester		Junior Semester		Senior Semester	
Fall	**Spring**	**Fall**	**Spring**	**Fall**	**Spring**	**Fall**	**Spring**
College Algebra (3)	Trigonometry (3)	Calculus I (5)	Elective (3)	ENGT 3XX Intro. to Eng. Tech. (3)	PHIL 385 Engineering Ethics (3) P: Jr. standing	ENGT X18 Introduction to Fluids (3) 2R; 2L P: MATH XXX and ME 398	ENGT X10 Robotics Technology (3) P: ENGT XX9 or equiv.
Gen. Chem. I (4)		Gen. Physics I (4)	Fine Arts Course (3)	IME 258 Mfg. Meth. and Materials I (3) 2R; 3L. P: MATH 123	ENGL 210 Comp.: Bus., Prof., and Tech. Writing (3) P: ENGL 101 and 102	ENGT XX8 Machine Elements(3) P: ENGT XX2 and ENGT X21	IME 255 Engineering Economy (3) P: MATH XXX
Gen. Chem. I (1)	Philosophy Intro. Course (3)	Gen. Physics Lab I (1)		IME 254 Engineering Probability and Statistics I (3) P: MATH XXX	ECE 238 Assem. Lang. Prog. for Eng. (3) P: ECE 138	ENGT 4X1 Senior Project I (3) P: Eng. Tech. Sr. standing	ENGT 4X2 Senior Project II (3) P: ENGT 4X1
Elective (3)	Public Speaking (3)	Elective[1] (3)	Elective (3)	ECE 194 Intro. to Digital Design (4) P: MATH 111 or equiv.	ENGT 2XX. Circuits Technology (4) 3R; 3L P: ECE 138	ENGT XX9 Industrial Controls and Instrumentation (3) P: ENGT 2XX and MATH XXX	ENGT X11 Micro.-Based Mech. Sys. Tech.(3) 2R: 2L P: ENGT XX9
Social and Behavioral Sciences Intro. Course (3)	Elective (3)	Social and Behavioral Sciences Course (3)	Humanities Intro. Course (3)	CS 211 Prob. Solving and Prog. in C (4) P: ENGL 101, MATH 111, 112 or equiv. with a C or better in each	ENGT XX2 Applied Mech.: Statics and Dynamics (3) P: MATH XXX	ENGT 4XX Elect. Power and Machinery (4) 3R; 3L P: ENGT 2XX and ENGL 102; C: ENGT 4XXL	ENGT X13 Intro. to Strength and Mech. of Mat. (3) P: ENGT XX2
English Comp. 101 (3)	English Comp. 102 (3)		Elective (3)		IME 222 Eng. Graphics (3) P: MATH 133 or equiv.	ECE 394 Intro. to Computer Architecture (3) P: ECE 194; C: ECE 138	
Total: 17 hrs	**Total: 15 hrs**	**Total: 16 hrs**	**Total: 15 hrs**	**Total: 17 hrs**	**Total: 19 hrs**	**Total: 19 hrs**	**Total: 15 hrs**

TABLE 3. CONCENTRATION CURRICULUM BY SEMESTERS (continued)

Renewable Energy Technology Program Curriculum—CC 2+3

Freshman Semester				Sophomore Semester		Junior Semester		Senior Semester	
Fall	**Spring**	**Fall**	**Spring**	**Fall**	**Spring**	**Fall**	**Spring**	**Fall**	**Spring**
FAA AP course	FAA AP course	FAA AP course	FAA AP course	MATH 123 Trigonometry (3) P: see catalog	MATH XXX Tech. Calc. (5) P: MATH 123, see catalog	ME 398 Thermodynamics 1 (3) P: MATH XXX	ENGT X18 Introduction to Fluids (3) 2R, 2L P: ME 398; MATH XXX	ENGT 49X Sustainable Power Generation (3) P: ME 469 and ENGT47X	ENGT XX1 Renewable/Sustainable Engineering Technology Project Course(3) P: Jr. standing or dept. consent
FAA AP course	FAA AP course	FAA AP course	FAA AP course	Fine Arts Intro. Course (3)	PHYS 213 Gen. Physics I (5) 4R; 3L P: MATH 112, see catalog	ENGT XX2 Applied Mech.: Statics and Dynamics (3) P: MATH XXX or equiv.	ME 469 Energy Conversion (3) P: ME 398	IME 254 Engineering Probability and Statistics I (3) P: MATH XXX	ENGT X2X Fluid Power Tech. (3) 2R, 2L P: ENGT XX2; ME 521
FAA AP course	FAA AP course	FAA AP course	FAA AP course	Social and Behavioral Science Intro. Course (3)	Social and Behavioral Sciences FS Course (3)	ENGL 210 Comp.: Bus., Prof., and Tech. Writing (3) P: ENGL 101 and 102	ENGT 47X Renewable Engineering Technology (3) P: ENGT 3XX	ENGT 46X Applied Fluid Mechanics (3) 2R; 2L P: ENGT X18	ENGT 4XX Elect. Power and Machinery (4) 3R; 3L P: ENGT 2XX and ENGL 102
FAA AP course	FAA AP course	FAA AP course	FAA AP course	COMM 111 Public Speaking (3)	Humanities Intro. Course (3)	ENGT 3XX Introduction to Engineering Technology (3)	IME 258 Mfg. Meth. and Mat. I (3) P: MATH 123	ENGT 4X1 Senior Project I (3) P: Eng. Tech. Sr. standing	ENGT 4X2 Senior Project II (3) P: ENGT 4X1
FAA AP course	FAA AP course	FAA AP course	FAA AP course	ENGL 101 College Eng. I (3) P: ENGL 013 or Placement Exam	ENGL 102 College Eng. II (3) P: ENGL 101	IME 255 Engineering Economy (3) P: MATH XXX	ENGT 2XX. Circuits Technology (4) 3R; 3L	ENGT X3X Renewable Energy Management (3) P: ECON 202, ENGT 47X	ENGT X1X Solar Engineering (3) P: ME 398 and ENGT 2XX
FAA AP course	FAA AP course	FAA AP course	FAA AP course	CHEM 211 Gen. Chem. I (5) 3R; 4L P: see catalog		PHIL 385 Engineering Ethics (3) P: Jr. standing	CS 211 Prob. Solving and Prog. in C (4) P: ENGL 101, MATH 111, 112 or equiv. with a C or better in each	ENGT 48X Energy, the Environment and Sustainability (3) P: ECON 202; ENGT 47X	ENGT 50X Sustainable Heating, Ventilating and Air Conditioning (HVAC) (3) 2R; 1L P: ENGT 46X; ME 469
						IME 222 Eng. Graphics (3) P: MATH 123 or equiv.			
Total: 15-18	**Total: 15-18**	**Total: 15-18**	**Total: 15-18**	**Total: 20 hrs**	**Total: 19 hrs**	**Total: 21 hrs**	**Total: 20 hrs**	**Total: 18 hrs**	**Total: 19 hrs**

TABLE 3. CONCENTRATION CURRICULUM BY SEMESTERS (continued)

Renewable Energy Technology Program Curriculum—CC Transfer

Freshman Semester		Sophomore Semester		Junior Semester		Senior Semester	
Fall	**Spring**	**Fall**	**Spring**	**Fall**	**Spring**	**Fall**	**Spring**
College Algebra (3)	Trigonometry (3)	Calculus I (5)	Elective (3)	ME 398 Thermodynamics 1 (3) P: MATH XXX	ENGT X18 Introduction to Fluids (3) 2R, 2L P: ME 398; MATH XXX	ENGT 49X Sustainable Power Generation (3) P: ME 469 and ENGT47X	ENGT XX1 Renewable/Sustainable Engineering Technology Project Course(3) P: Jr. standing or dept. consent
Gen. Chem. I (4)		Gen. Physics I (4	Fine Arts Course (3)	ENGT XX2 Applied Mech.: Statics and Dynamics (3) P: MATH XXX or equiv.	ME 469 Energy Conversion (3) P: ME 398	IME 254 Engineering Probability and Statistics I (3) P: MATH XXX	ENGT X2X Fluid Power Tech. (3) 2R, 2L P: ENGT XX2; ME 521
Gen. Chem. I (1)	Philosophy Intro. Course (3)	Gen. Physics Lab I (1)		ENGL 210 Comp.: Bus., Prof., and Tech. Writing (3) P: ENGL 101 and 102	ENGT 47X Renewable Engineering Technology (3) P: ENGT 3XX	ENGT 46X Applied Fluid Mechanics (3) 2R; 2L P: ENGT X18	ENGT 4XX Elect. Power and Machinery (4) 3R; 3L P: ENGT 2XX and ENGL 102
Elective (3)	Public Speaking (3)	Elective[1] (3)	Elective (3)	ENGT 3XX Introduction to Engineering Technology (3)	IME 258 Mfg. Meth. and Mat. I (3) P: MATH 123	ENGT 4X1 Senior Project I (3) P: Eng. Tech. Senior Standing	ENGT 4X2 Senior Project II (3) P: ENGT 4X1
Social and Behavioral Sciences Intro. Course (3)	Elective (3)	Social and Behavioral Sciences Course (3)	Humanities Intro. Course (3)	IME 255 Engineering Economy (3) P: MATH XXX	ENGT 2XX. Circuits Technology (4) 3R; 3L	ENGT X3X Renewable Energy Management (3) P: ECON 202, ENGT 47X	ENGT X1X Solar Engineering (3) P: ME 398 and ENGT 2XX
English Comp. 101 (3)	English Comp. 102 (3)		Elective (3)	PHIL 385 Engineering Ethics (3) P: Jr. standing	CS 211 Prob. Solving and Prog. in C (4) P: ENGL 101, MATH 111, 112 or equiv. with a C or better in each	ENGT 48X Energy, the Environment and Sustainability (3) P: ECON 202; ENGT 47X	ENGT 50X Sustainable Heating, Ventilating and Air Conditioning (HVAC) (3) 2R; 1L P: ENGT 46X; ME 469
				IME 222 Eng. Graphics (3) P: MATH 123 or equiv.			
Total: 17 hrs	**Total: 15 hrs**	**Total: 16 hrs**	**Total: 15 hrs**	**Total: 21 hrs**	**Total: 20 hrs**	**Total: 18 hrs**	**Total: 19 hrs**

COURSE DESCRIPTIONS

Communications (9 credits)

COMM 111. Public Speaking (3 cr). Covers basic concepts of speech communication as applied to public speaking. Targets students wishing to enhance leadership potential by improvement in traditional public speaking situations.

ENGL 100/101. College English I (3 cr). A general education basic skills course that focuses on developing reading and writing skills appropriate to academic discourse. Integrates the writing process, rhetorical modes, and library skills into writing assignments related primarily to nonfiction readings.

ENGL 102. College English II (3 cr). Should be taken after ENGL 101 in the freshman year. Emphasizes critical reading, research, and argumentation.

General Education

15 credits of Fine Arts/Humanities/Behavioral Sciences courses.

PHIL 385. Engineering Ethics (3 cr) (Prerequisite: Junior standing). Examines representative ethical issues that arise in engineering. Includes topics such as professional responsibility and integrity, whistle-blowing, conflict of interest, ethical issues in engineering consulting and research, engineering and environmental issues, and engineering in a global context.

Math and Science

CHEM 211. General Chemistry I (5 cr) 3R; 4L (Prerequisites: a college-level chemistry course such as CHEM 110, 101 or 103 or high school chemistry or physics. Corequisite: 111 or two units of high school algebra or MATH 011). Provides an introduction to the general concepts of chemistry. Includes chemical stoichiometry, atomic and molecular structure, bonding, gas laws, states of matter, and chemical periodicity.

MATH XXX. Technical Calculus I (5 cr) (Prerequisite: MATH 112 with a C or better, or two units of high school algebra). Involves analytic geometry and calculus in an interrelated form.

PHYS 213. University Physics I (4 cr) (Prerequisite: high school physics or PHYS 151). Provides the first semester of a calculus-based physics sequence. Studies mechanics, heat, and wave motion.

Engineering Technology Core

CS 211. Problem Solving and Programming in C (4 cr) (Prerequisites: ENGL 101, MATH 111, 112 or equivalents with a C or better in each). Provides a first course in programming in a high-level language. Emphasizes analyzing problems, designing solutions, and expressing them in the form of a well-structured program in the high-level language C.

ENGT XX2. Applied Mechanics: Statics and Dynamics (3 cr) (Prerequisite: MATH XXX). Studies force systems, mass acceleration, impulse momentum, resultants and equilibrium, centroids of areas and centers of gravity of bodies, trusses, frames, beans, friction, and moments of inertia of areas and bodies.

ENGT 3XX. Introduction to Engineering Technology (3 cr) (Prerequisites: None). Introduces students to history of engineering technology theories and concepts and its applications in industry.

ENGT 4X1. Senior Project I (3 cr) (Prerequisites: Mechatronics Engineering Technology senior standing). Comprehensively covers mechatronics engineering technology and its applications.

ENGT 4X2. Senior Project II (3 cr) (Prerequisites: ENGT 4X1). Continues the Senior Project I.

IME 222. Engineering Graphics (3 cr) (Prerequisite: MATH 123 or equivalent). Uses computer graphics to produce technical drawings and solve engineering design problems. Studies basic spatial relationships involving orthographic projections, auxiliary views, and pictorial projections. Includes design implementation features including dimensioning, tolerancing, sectional views, threaded fasteners, blueprint reading, and working drawings. Also uses descriptive geometry to find true lengths of lines; spatial relationships between points, lines, and planes; and intersections of solids, surfaces, and conic sections.

IME 254. Engineering Probability and Statistics I (3 cr) (Prerequisite: MATH XXX Tech. Calc.). Studies the concepts of probability theory, random variables, distributions, moments, sample statistics, and confidence intervals.

IME 255. Engineering Economy (3 cr) (MATH XXX Tech. Calc). Provides economic comparisons of engineering alternatives considering the time value of money, taxes, and depreciation; accounting and its relationship to economic analysis; and replacement decisions.

IME 258. Manufacturing Methods and Materials I (3 cr) (Prerequisite: MATH 123). Provides a basic understanding of materials and processes used to manufacture products. Covers some of the major manufacturing processes including metal machining, metal forming, extrusion, casting, joining, and plastics forming. Emphasizes the use of materials, sciences, and mathematics to understand the behavior of materials undergoing the manufacturing process. Includes an introduction to process planning. Provides students with an extensive hands-on experience in different manufacturing processes and in teamwork.

Engineering Technology Electives

At this time, electives will be completed during the student's freshman and sophomore years of college. Electives are not permitted during the student's junior and senior years while enrolled in the BSET program.

Major Requirements

ACCT 210. Financial Accounting (3 cr) (Prerequisite: n/a). Studies accounting as a means of communicating financial information about the activities of business enterprises. Emphasizes concepts and principles underlying the measurement of incomes and financial position and how this information may be used to evaluate the progress of a firm.

ACCT 220. Managerial Accounting (3 cr). (Prerequisite: ACCT 210). The study of accounting in terms of management's information requirements. Emphasizes the use of accounting information to assist management in planning, analyzing, and implementing business decisions and activities.

BLAW 431. Legal Environment of Business (3 cr) (Prerequisites: Junior standing, advanced standing). Introduces the legal environment in which businesses operate. Considers the institutions and processes related to business law, and the major frameworks of private and public law, including contracts and commercial transactions, business organizations, business torts and crimes, and regulatory law. Addresses ethical and social responsibility as an integral aspect of legal regulation.

ECE 194. Introduction to Digital Design (4 cr) 3R; 3L. (Prerequisite: MATH 111 or equivalent). Provides an introduction to digital design concepts. Includes number systems, Boolean algebra, Karnaugh maps, combinational circuit design, adders, multiplexers, decoders, sequential circuit design, state diagram, flip flops, sequence detectors, and test different combinational and sequential circuits. Uses CAD tools for circuit simulation.

ECE 238. Assembly Language Programming for Engineers (3 cr) (Prerequisite: ECE 138). Provides an introduction to basic concepts of computer organization and operation. Studies machine and assembly language programming concepts that illustrate basic principles and techniques. Includes laboratory exercises to gain experience using personal computers.

ECE 394. Introduction to Computer Architecture (3 cr) (Prerequisite: ECE 194 and Corequisite: ECE 138). Introduces memory systems, arithmetic circuits, and computer architecture. Offers in-class designing of a small computer. Studies instruction-set selection, bus systems, hard-wired design, and microprogrammed design.

ECON 202. Principles of Microeconomics (3 cr) (Prerequisite: ECON 201). *Serves as a general education further study course.* Introduces the study of markets and the behavior of household and business units. Pays special attention to the role of competition in determining market performance. Includes other topics on contemporary public issues, such as government regulation, international trade and economics of the environment.

ENGL 210. Composition: Business, Professional, and Technical Writing (3 cr) (Prerequisites: ENGL 101 and 102 or instructor's consent). Provides instruction and practice in writing the kinds of letters, memos, instructions, and reports required in the professional world of business and industry. Emphasizes both formats and techniques necessary for effective and persuasive professional communication.

ENGR 301. The Engineer as Leader (3 cr) (Prerequisites: None). Develops engineering students for leadership roles soon after graduation. Covers leadership theory, leadership in the context of engineering (both formal and informal). Includes several invited speakers. Requires students to complete leadership reflections as well as other assignments.

ENGT XX1. Renewable/Sustainable Engineering Technology—Project Course (3 cr) (Prerequisites: Junior standing or departmental consent). Under faculty supervision and approval, allows the student to focus on a renewable/sustainable engineering technology topic.

ENGT XX4. Engineering Technology Management (3 cr) (Prerequisites: IME 254 and IME 255). Introduces the design and control of technologically based projects. Considers both the theoretical and practical aspects of systems models, organizational development, project planning and control, resource allocation, team development, and personal skill assessment.

ENGT XX5. Analysis of Decision Processes in Technology (3 cr) (Prerequisites: IME 254 and IME 255). Provides decision analysis as it applies to capital equipment selection and replacement, process design, and policy development. Develops and applies explicit consideration of risk, uncertainty, and multiple attributes using modern computer-aided analysis techniques.

ENGT XX6. Maintenance Regulations and Practices (2 cr) (Prerequisite: ENGT 3XX). Provides regulatory structure and the legal environment impacting aviation maintenance operations and practices. Includes discussion of the Federal Aviation Administration regulation rule-making process, legal documentation, and maintenance publications required for repair stations and airworthiness.

ENGT XX7. Aircraft Engines (3 cr) 2R; 2L (Prerequisite: ENGT X12). Discusses aircraft engine types—cycle analysis and performance parameters of piston engines, cycle analysis and performance parameters of jet and gas turbine engines (ramjets, turbojets, turbofans, turboprops and turboshafts), and classification and performance parameters of rocket engines. Introduces basic power plant concepts and principles.

ENGT XX8. Machine Elements (3 cr) (Prerequisites ENGT XX2 and ENGT X21). Applies statics, dynamics, and strength of materials methods to the selection of basic machine components. Develops the fundamental principles required for selection of individual elements that compose a machine.

ENGT XX9. Industrial Controls and Instrumentation (3 cr) (Prerequisites: ENGT 2XX and MATH XXX). Applicably analyzes the dynamic behavior of control systems, based on the laws of physics and linear mathematics. Studies modern and classical methods of feedback control systems and their applications.

ENGT X1X. Solar Engineering (3 cr) (Prerequisite: Junior standing recommended). Studies the basics of solar engineering and the basic properties of solar radiation and its measurements. Reviews and discusses the effect of orientation and slope of receiving surfaces and the optical properties of materials. Studies the physics of photovoltaic devices, how they can be modeled mathematically, and how they need to be connected and packaged to provide practical power producing modules. Studies electrical energy storage and control, and provides an understanding of the various forms of solar thermal electricity generation.

ENGT X2X. Fluid Power Technology (3 cr) 2R; 2L (Prerequisites: ENGT 46X, ENGT XX2). Examines the principles of hydraulic, pneumatic, and vacuum-fluid power and control systems; force; pressure; work; and power. Examines the physical and chemical characteristics of working fluids for fluid power systems, and for handling, storage, leakage, spills, and disposal. Covers component selection and sizing: pumps, hydraulic motors, compressors, reservoirs, heat exchangers, filters, seals, regulators, valves, accumulators, actuators, hydro-static systems, fluid clutches, torque converters, and turbines. Investigates systems integration, analysis, testing, and diagnostics. Researches static and dynamic characteristics of actuation systems. Considers designing for safety, maintenance, repair, and end-of-service-life recycling/waste management.

ENGT X3X. Renewable Energy Management. (3 cr) (Prerequisites: ECON 202; ENGT 47X). Covers principles of engineering management as they relate to selected renewable energies: wind, solar, and hydro. Includes topics such as project planning and process, feasibility studies, regulations and public policy, greenhouse gas emission calculations, financial analysis, and methods of energy management found in the commercial power industry and facilities.

ENGT X10. Robotics Technology (3 cr) (Prerequisites: ENGT XX9 or equivalent). Examines systems using robotics in technology. Provides the fundamentals of manipulators, sensors, actuator, end-effectors, and product design for automation. Includes kinematics, controls, programming of manipulator, and simulation. Also covers artificial intelligence.

ENGT X11. Microcomputer-Based Mechanical Systems Technologies (3 cr) (Prerequisite: ENGT XX9). Focuses on microcomputer-based real-time control of mechanical systems technologies. Familiarizes students with software methodologies used for real-time control. Includes an introduction to the C programming language, which is most relevant to interfacing and implementation of control theory in computer-based systems. Includes laboratory sessions involving interfacing microcomputers to mechanical systems.
ENGT X12. Aerodynamics and Performance (2 cr) (Prerequisite: ENGT XX2). Covers theory of flight, aircraft structure and control, wind tunnel lab demonstrations, propulsion, performance, and weight and balance.

ENGT X13. Introduction to Strength and Mechanics of Materials (3 cr) (Prerequisite: ENGT XX2). Aims at providing students with a foundational knowledge of strength of materials, with emphasis on applications and problem-solving. Includes topics such as simple stresses and strains, torsion in a shaft, shear force and bending moment diagrams, stresses in beams, combined stresses, and experimental stress analysis.

ENGT X14. Avionics Systems (3 cr) (Prerequisites: ENGT X15 and ENGT 2XX). Studies aircraft electronic systems, including topics such as cockpit instrumentation, aircraft navigation, communication, surveillance, control, and lighting electronics.

ENGT X15. Aircraft Structures and Systems (3 cr) (Prerequisites: ENGT X21). Examines the characteristics and design features of aircraft structures, general construction of the fuselage and main control surfaces, basic analysis of the stress and strain due to forces within the operating flight envelope, and the structural requirements imposed by various aircraft systems. Covers other aircraft systems such as the hydraulic system and landing gear, fuel and flight control systems, and fuselage construction and failure concepts. Focuses on aircraft hydraulic components and their working principles, hydraulic circuits, operating characteristics, hydraulic drives and application circuits, control of landing gears, and flight control surfaces. Includes other topics such as environmental control systems encompassing air-conditioning, cabin pressurization, oxygen system, and various auxiliary systems including the fire and ice protection system, rain removal, and water and waste systems.

ENGT X16. Aircraft Damage Analysis and Repair (3 cr) (Prerequisites: ENGT X21). Provides an introduction to aircraft damage analysis, with an emphasis on stress analysis and methods to make structural repairs. Includes stress intensity, fracture toughness, residual strength, fatigue crack growth rate, fatigue crack propagation, and damage-tolerance concepts.

ENGT X17. Non-Destructive Testing. (3 cr) 1R; 4L (Prerequisites: ENGT X22 and X13). Examines theory and application of non-destructive testing methods. Studies liquid penetrant, magnetic particles, radiography, eddy current, ultrasound, and enhanced visuals, among others.

ENGT X18. Introduction to Fluids (3 cr) (2R, 2L) (Prerequisite: ME 398 and MATH XXX). Provides a basic study of fluid mechanics in various applications. Studies flow in closed conduits and over immersed bodies. Includes compressible flow; flow visualization; pressure drop in pipes; pitot-static and hot-film electronic velocity measurements; temperature, density, and fluid viscosity measurements; and turbomachinery.

ENGT X21. Material Applications in Engineering (3 cr) (1R, 2L) (Prerequisites: CHEM 211 and, MATH XXX). Presents an overview of structures, properties, and applications of metals, polymers, ceramics and composites commonly used in industry. Develops problem-solving skills in the areas of materials selection, evaluation, measurement, and testing.

ENGT X22. Material Applications in Engineering Laboratory (1 cr) 2L (Corequisite: ENGT X21). Companion laboratory course to ENGT X21. Experimentally studies material applications used in aircraft structures, including experiments with metals, polymers, ceramics, and composites.

ENGT X23. Aviation Safety and Security (2 cr) (Prerequisite: ECE 130). Covers safety in aviation design, operation, and maintenance; hazardous materials; airport environment issues; and security regulations for aviation. Explores the physiological and psychological factors relating to flight safety, emphasizing cause and effect of airplane accidents and related problem-solving processes. Includes a systems approach to safety program development and management.

ENGT X24. Aircraft Fatigue and Fracture Mechanics (3 cr) (Prerequisites: DS 350 and ENGT X21). Covers fracture mechanics in metals, ceramics, polymers, and composites. Deals with the primary analytical methods used to quantify fatigue damage, including the stress life approach, strain life approach, and future mechanics approach.

ENGT X25. Aircraft Reliability, Maintainability and Supportability (3 cr) (Prerequisites: ENGT X15 and IME 676). Examines aircraft reliability, maintainability, and supportability (RMS). Discusses methods of incorporating reliability and maintainability into aircraft design. Covers support requirements and the economic impact of maintenance on life-cycle costs.

ENGT X26. Aircraft Propulsion Systems. (2 cr) (Prerequisites: ENGT XX2 and ECE 138). Equips students with an understanding of the basic principles of aircraft propulsion systems and the design features of some of the components and subsystems. Covers such topics as propeller theory, gas turbine cycles, various jet and rocket propulsion systems, design features of inlets, compressors, combustion chambers, turbines, and other elements of propulsion systems.

ENGT 2XX. Circuits Technology (4 cr) 3R; 3L. (Prerequisite: MATH XXX. Studies electric circuit technology principles and their applications. Includes DC circuits, network theorems, capacitance and inductance, AC, circuit analysis, phasor plane techniques, complex power, and balanced three-phase circuits. Includes a laboratory.

ENGT 4XX. Electrical Power and Machinery (4 cr) 3R; 3L. (Prerequisites: ENGT 2XX and ENGL 102). Studies power transformers, single and polyphase circuits including DC machines, AC single and polyphase synchronous and induction machines, and introduction to power electronics.

ENGT 46X. Applied Fluid Mechanics. (3 cr) 2R; 2L. (Prerequisites: ENGT X18). Covers fluid properties, fluid statics, fluid flow concepts, dynamic similitude, fluid resistance, ideal flow, compressible flow, and pneumatic and hydraulic applications.

ENGT 47X. Renewable Energy Technology. (3 cr) (Prerequisites: ENGT 3XX). Provides an overview of renewable engineering issues: planet earth resources and limitations, human population growth, atmospheric emissions, and water contamination. Covers the fundamentals of energy conversion, carbon dioxide and other emissions, and the impact of greenhouse gases. Discusses the role of the engineer and the engineering technologist in economics, design, maintenance, and life cycle support of renewable systems and components, including recycling and waste management. Considers the impact of public policy on renewable technology developments. Includes typical case studies, such as LA smog, CFC refrigerants and ozone depletion, NOx emissions and acid rain, and ground water contamination and remediation. Covers projections of future sustainability issues.

ENGT 48X. Energy, the Environment, and Sustainability. (3 cr) (Prerequisites: ECON 202; ENGT 47X). Provides a study of the global energy situation and the interactions between human activities in the energy field and in the environment. Provides knowledge of available management systems and tools as well as technical mitigation methods relevant to the energy field that are applicable within the existing legal framework.

ENGT 49X. Sustainable Power Generation. (3 cr) (Prerequisites: ME 469; ENGT 47X). Provides the fundamentals of sustainable power generation including solar, geo-thermal, biomass, wind, hydro, tidal, and wave. Covers embedded renewable generation: technical challenges, opportunities, and connection in electrical transmission and distribution grids.

ENGT 50X. Sustainable Heating, Ventilating and Air Conditioning (HVAC). (3 cr); 2R; 1L. (Prerequisites: ENGT 46X; ME 469). Covers HVAC system requirements to meet human comfort needs in buildings, motor vehicles, mass transit vehicles, and aircraft. Examines human environmental needs related to activity; HVAC utilizing passive and active systems; renewable energy systems utilizing direct solar radiation, solar-liquid, solar-air, or solar-thermal electric sources; hybrid systems combining renewable energy with conventional combustion, heat pumps, or electric resistance heat; and ambient wind-driven and -powered air handling and liquid pumping requirements. Covers selection, production, storage, and handling of refrigerants and other HVAC working fluids, both currently and in the future, and discusses issues related to design, installation, and maintenance. Reviews EPA and other regulatory requirements; low-energy efficient-design (LEED) buildings at silver, gold, and platinum levels; and building and zoning codes and standards. Considers community impact: solar and wind shadows, thermal, noise, and other environmental factors. Discusses end-of-service-life recycling/waste management.

FIN 340. Financial Management I (3 cr) (Prerequisites: ACCT 210, junior standing, advanced standing). Studies corporate organization, types of securities, and types of financial institutions. Includes analysis of risk and rates of return and long-term investment decisions.

IB 333. International Business (3 cr) (Prerequisite: Junior standing recommended). *Serves as a general education issues and perspectives course*. Provides a comprehensive overview of the multifaceted issues in international business and globalization that impact all functional areas of business. Examines contemporary issues, perspectives, and influences on American business, economy, government, labor, society, technology, public policy, and competitiveness. Reviews international trade theories, foreign exchange, monetary systems, balance of payments, trade policies, trade agreements, global trading systems, and foreign investment, including cultural diversity, human rights, ethics, and social responsibility issues. Examines implications for small and large businesses, including case studies from Wichita firms engaged in international business.

ME 398. Thermodynamics (3 cr) (Prerequisites: MATH XXX). Covers properties of a substance, work and heat interaction, first law of thermodynamics, Carnot cycle, entropy, ideal gases, irreversibility, and efficiency.

ME 469. Energy Conversion (3 cr) (Prerequisites: ME 398). Discusses energy-conversion principles and their implementation in engineering devices, including thermal, mechanical, nuclear, and direct-energy conversion processes.

MGMT 360. Management and Organizational Behavior (3 cr) (Prerequisites: junior standing, advanced standing). Provides an overview of concepts, theories, and practices that apply to the management of work organizations. Includes organizational goals, corporate strategy, structure, decision making,

leadership, motivation, communication, group dynamics, organizational change, and the international dimension of business.

MKT 300. Marketing (3 cr) (Prerequisites: junior standing, advanced standing). Describes and analyzes the concepts and tools used by managers in planning and evaluating marketing decisions. Includes specific topics on product development, pricing, distribution, promotion, information processing, international marketing, and marketing in contemporary society.

PHIL 385. Engineering Ethics (3 cr) (Prerequisite: Junior standing). *Serves as a general education issues and perspectives course*. Examines representative ethical issues that arise in engineering. Includes topics such as professional responsibility and integrity, whistle-blowing, conflict of interest, ethical issues in engineering consulting and research, engineering and environmental issues, and engineering in a global context.

F. Engineering Technology Faculty

Wichita State University currently has faculty with teaching and research capabilities in subjects related to the Engineering Technology curriculum described in section E. Faculty from the colleges of Engineering and Business will synergistically develop and offer basic and core interdisciplinary courses and technical electives. Table 4 provides a list of current Wichita State University faculty by areas of expertise who are active in teaching Engineering Technology-related topics. Total cost of the proposed new faculty positions and staffing for the program is shown in Table 5.

TABLE 4. WICHITA STATE UNIVERSITY FACULTY WITH ACTIVE/POTENTIAL RESEARCH AND TEACHING INTERESTS IN ENGINEERING TECHNOLOGY FIELDS

Engineering Technology Subspecialty	Faculty
Aircraft Maintenance Technology	D. Koert, PhD, Assoc. Prof. (ME) V. Madhavan, PhD, Prof. (IMfE)
Engineering Technology Management	D. Malzahn, PhD, Prof. (IMfE) L. Whitman, PhD, Assoc. Prof. (IMfE) V. Madhavan, PhD, Prof. (IMfE) M. Yildirim, PhD, Assoc. Prof (IMfE)
Mechatronics Technology	D. Koert, PhD, Assoc. Prof. (ME) B. Driessen, PhD, Asst. Prof. (ME) M. Jorgensen, PhD, Assoc. Prof. (IMfE) V. Madhavan, PhD, Prof. (IMfE) J. Watkins, PhD, Assoc. Prof. (EECS)
Renewable Energy Technology	D. Koert, PhD, Assoc. Prof. (ME) J. Twomey, Prof. (IMfE) M. Overcash, PhD, Prof. (IMfE) W. Jewell, PhD, Prof. (EECS)

TABLE 5. TOTAL PERSONNEL COST FOR PROPOSED PROGRAM

Personnel	First Year of Program—New	Second Year of Program—New	Third Year of Program—New	TOTAL STARTUP COSTS
Faculty Salaries and Fringe	(1.0 FTE) $77,500		(1.0 FTE) $77,500	$155,000
Adjunct Faculty Salaries and Fringe	$100,000			$100,000
Technician Salary and Fringe	$0	$0	$0	$0
Secretary Salary and Fringe	$40,000			$40,000
TOTAL SALARIES AND FRINGE	$217,500		$77,500	$295,000

G. Academic Support

Advising

In addition to WSU's advising services, the CoE offers academic advising to all WSU engineering degree-bound students. Advisers "take interest in the student as a person and track his/her progress; assist the student in the navigation of the curriculum, especially concerning general education and course prerequisites; know the university policies and procedures and campus resources available to the students; respond to the students' requests for an appointment in a timely manner; take the time to provide meaningful academic and career advice; create a respectful and supportive atmosphere during advising sessions; avoid any appearance of preferential treatment or conflict of interest; discourage students from violating institutional policies; maintain highest standards of professional conduct; assist the student in setting long-term academic and career goals; recognize the limitations of his/her authority and are willing to ask for assistance from the department chair and/or Engineering Records Office" (http://webs.wichita.edu/?u=engineering&p=/roleofthefacultyadvisor).

Peer Tutoring

Wichita State University offers peer tutoring services through a variety of organizations. Additionally, the CoE offers GEEKS (Great Expectations: Engineering Kansas Scholars). GEEKS is a CoE "success program to help students reach their academic goals." This group offers participants "two free weekly tutor sessions" in Calculus I, Calculus II, Physics I, Chemistry I, and Circuits.

Student Organizations

Overall, WSU has more than 150 student organizations. Of these student organizations, the CoE has 12 organizations available for students: American Institute of Aeronautics and Astronautics (AIAA), American Society for Quality (ASQ), Association for Operations Management (APICS), American Society of Mechanical Engineers (ASME), Engineering Council, Institute of Electrical and Electronics Engineers (IEEE), Institute of Industrial Engineers (IEE), Pi Tau Sigma—Mechanical Engineering Honor Society, Society of Automotive Engineers (SAE), Sigma Gamma Tau—Aerospace Engineering Honor Society, Society of Manufacturing Engineers (SME), Society of Women Engineers (SWE), and Tau Beta Pi—Engineering Honor Society.

Non-Traditional Student Association

The Non-Traditional Student Association (NTSA) provides assistance to returning adult learners by enhancing communication, organizing tours, and advocacy for non-traditional student issues. "Approximately 50 percent of Wichita State University's students are returning adults—students between the ages of 24 and 59 years old and who have been out of school for three or more years." With the average age of 27.8 for the proposed degree program student, the NTSA will play a key role in supporting new and existing students (http://webs.wichita.edu/?u=NTSA&p=/about/).

Scholarships

Over $500,000 in academic scholarships are awarded each year to students within the College of Engineering. Scholarships are designated for current students and/or for recruiting new students. Students may apply for additional scholarship opportunities through organizations such as the SAE and SWE (http://webs.wichita.edu/?u=ENGINEERING&p=/scholarships/).

The WSU College of Engineering also has the largest engineering scholarship competition in the state of Kansas. In 2009–10, the Wallace Invitational for Scholarships in Engineering (WISE) competition provided over $670,000 in scholarships to 75 high school seniors for four years of engineering study at the CoE. Per year, approximately $250,000 goes to high school seniors/incoming freshmen, and the remaining approximately $350,000 goes to current engineering students. Some of these scholarships will be awarded to BSET students as they transfer to WSU. Currently, the administration of the CoE is working with the WSU Foundation to seek funding for additional scholarships that will support students interested in the Engineering Technology program. In fact, a couple of proposals have been submitted to donors. Furthermore, industry will reimburse current employees who would like to pursue the proposed Engineering Technology program.

WSU Libraries

WSU Libraries would provide a wealth of information for students pursuing engineering technology degrees. A few off-the-shelf publications and journals that students would have access to are the following: *Engineering Aerodynamics and Performance*, *The International Journal of Robotics Research*, *Aircraft Engineering and Aerospace Technology*, *Journal of Aircraft*, *The Aeronautical Journal*, *Journal of Mechanics*, *Journal of Management Science*, *Journal of Economic Issues*, *Advanced Management Journal*, and more. In addition to these multiple journals and publications, "the WSU Libraries subscribe to several databases which can be used to identify and access scholarly literature." Engineering technology students would have access to Compendex/INSPEC, Engineering Village, IEEE Xplore, Applied Science Full Text, NTIS, Knovel Library, ASM Handbooks Online, Intuit: Science, Engineering and Technology, TechXtra, eiNET.net, and Greatest Engineering Achievements of the 20th Century. Furthermore, WSU Libraries accommodates students by remaining open after hours during the evenings and weekends (http://library.wichita.edu/).

H. Facilities and Equipment

Facilities

Part of Wichita State University's mission is to provide safe, well-maintained, and comfortable classroom environments and facilities that contribute to a positive learning experience. WSU has always strived to provide this learning environment for its students and other stakeholders. With this mission in mind, WSU's CoE is proud to host "modern, well-equipped laboratories" that "supplement classroom theory in ergonomics, manufacturing engineering, and computer analysis." The CoE "facilities include an Engineering Graphics Lab, Metrology Lab, Cessna Manufacturing Processes Lab, Ergonomics/Human Factors Lab, Composites Manufacturing Lab, Advanced Manufacturing Process Lab, Rapid Prototyping Lab, Virtual Reality Development Lab, and Open Computing Lab
(http://webs.wichita.edu/?u=imfge&p=/Admission/BSMFgE/)."

Additionally, in partnership with Wichita Area Technical College, Wichita State University, and the National Institute for Aviation Research (NIAR), Sedgwick County has recently (September 2010) opened the National Center for Aviation Training (NCAT) to meet the aviation manufacturing workforce demand for world-class training. "This world-class training facility will provide students the opportunity to receive hands-on, real-world training in the areas of general aviation manufacturing and aircraft and power plant mechanics. The Center consist(s) of three buildings: Advanced Manufacturing Technology Center (80,948 sq. ft.), the Aviation Service Center (96,243 sq. ft.) and an Assessment and Administration Center (30,435 sq. ft.) for admissions, student services, and employment placement. The Wichita Area Technical College will serve as the managing partner for the Center

(http://www.sedgwickcounty.org/workforce_development/)." WSU has committed mill levy funds to NCAT, the main laboratory facility supporting this program, and the current agreement between WSU and Sedgwick County will allow for the use of this facility with no additional cost to WSU's CoE. WSU will also be responsible for the five million dollar annual state budget for equipment for NCAT, part of which will be used for equipment for the BSET program.

Equipment

The cost of operating the program and equipment for the labs is outlined as follows:

	First Year	Second Year	Third Year	Total
Other Operating Expenses	$20,000	$20,800	$21,632	$62,432
Equipment	$155,000	----	----	$155,000
Total	$175,000	$20,800	$21,632	$217,432

III. Program Review, Assessment, and Accreditation

Once established, the Engineering Technology program will follow the accreditation procedures, guidelines, and criteria established by the Higher Learning Commission (HLC), Kansas Board of Regents (KBOR), Accreditation Board of Engineering Technology-Technology Accreditation Commission. The first accreditation visit of the Engineering Technology program will coincide with the next accreditation visit for the other six CoE-accredited programs that will take place in the year 2013. This date is one (1) year following the year of the program's first graduates and coincides with the next cycle of ABET review for the other six CoE programs. The Engineering Technology curriculum has been developed to align with ABET-TAC criteria and similar Bachelor of Science in Engineering Technology degree programs throughout the United States, such as those at Purdue University, California State University, North Carolina State University, Southern Polytechnic University, and Kansas State University-Salina.

Engineering Technology Program faculty will be responsible for its continued development, with the goal of a full six-year ABET-TAC accreditation. Prior to accreditation, program faculty will develop and implement an assessment process that will meet ABET-TAC requirements. An Industrial Advisory Board will provide advice in the refinement, further development, and evaluation of program objectives, and provide information regarding contemporary issues that graduates will be facing and other relevant issues that will impact the program.

The accreditation requirements for an Engineering Technology program are outlined by the ABET-TAC in terms of curricular and faculty requirements as follows:

1. Curriculum. The program must provide an integrated educational experience that develops the ability of graduates to apply pertinent knowledge to solving problems in the engineering

technology specialty. The orientation of the technical specialization must manifest itself through program educational objectives, faculty qualifications, program content, and business and industry guidance. These criteria specify subject areas and minimum total credit hours essential to all engineering technology programs. The curriculum must appropriately and effectively develop these subject areas in support of program educational and institutional objectives. The total credits for baccalaureate programs must consist of a minimum of 124 semester hours.

2. Faculty. The program shall demonstrate that those faculty members teaching courses that are primarily design in content are qualified to teach the subject matter by virtue of education and experience or professional licensure. The program is expected to develop, assess, and continuously improve the program satisfying all the stipulated criteria. As per the ABET-TAC criteria, the proposed program will demonstrate that graduates demonstrate the following:
    a. An appropriate mastery of the knowledge, techniques, skills, and modern tools of their disciplines.
    b. An ability to apply current knowledge and adapt to emerging applications of mathematics, science, engineering, and technology.
    c. An ability to conduct, analyze, and interpret experiments, and apply experimental results to improve processes.
    d. An ability to apply creativity in the design of systems, components, or processes appropriate to program educational objectives.
    e. An ability to function effectively on teams.
    f. An ability to identify, analyze, and solve technical problems.
    g. An ability to communicate effectively.
    h. A recognition of the need for, and an ability to engage in, lifelong learning
    i. An ability to understand professional, ethical and social responsibilities
    j. A respect for diversity and knowledge of contemporary professional, societal, and global issues.
    k. A commitment to quality, timeliness, and continuous improvement.

The Engineering Technology curriculum was designed around industry demands and needs. This falls in line with WSU's mission and also meets HLC, KBOR, and ABET-TAC standards. A preliminary mapping of the program curriculum to ABET-TAC a–k criteria is provided in Table 6. ABET-TAC criteria will also be met through the CoE's new Engineer of 2020 program.

TABLE 6. ABET-TAC A–K CRITERIA MAPPED TO PROGRAM CURRICULUM

COURSES	ABET CRITERIA										
	A- Apply Knowledge of Math, Science, and Engineering	**B**- Design, Conduct, and Analyze Experiments	**C**- Design Process, Component, and System	**D**- Work In Multidisciplinary Teams	**E**- Formulate and Solve Engineering Problems Relating to Engineering Technology Applications	**F**- Exhibit awareness of Ethical and Cost Issues	**G**-.Exhibit Communication Skills	**H**-Display Impact of Design on Global And Social Issues	**I**-.Recognize Continuous Learning	**J**- Exhibit Professional and Contemporary Issues	**K**- Use Modem Tools in Engineering Practice
CHEM 211 General Chemistry 1	**X**										
ENGT 3XX Introduction to Engineering Technology		**X**				**X**	**X**	**X**	**X**	**X**	
IME 222 Engineering Graphics	**X**	**X**				**X**	**X**	**X**	**X**	**X**	**X**
IME 254 Engineering Probability and Statistics I	**X**	**X**				**X**					
IME 255 Engineering Economy	**X**								**X**	**X**	
IME 258 Manufacturing Methods and Materials	**X**	**X**		**X**	**X**	**X**			**X**	**X**	**X**
MATH XXX Technical Calculus	**X**										
PHYS 213 General Physics I	**X**										
ENGT 4XX Senior Project I	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**
ENGT 4XX Senior Project II	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**
Tech Elect			**X**	**X**	**X**	**X**		**X**		**X**	
Tech Elect			**X**	**X**	**X**	**X**		**X**		**X**	

Engineer of 2020

Today's engineers must have broad skills to succeed. Therefore, to establish its leadership in reshaping the undergraduate experience to prepare the engineer of 2020, and at the same time make the educational experience more meaningful to the student and the student more desirable to local and national industries, the College of Engineering at WSU has established the Engineer of 2020 program. As such, to fulfill the requirements for a Bachelor of Science in Engineering (or Engineering Technology) degree, each student will complete the program course requirements, including at least three of the following six activities: Undergraduate Research, Cooperative Education, or Internship, Global Learning, or Study Abroad, Service Learning, Leadership, (and/or) Multidisciplinary Education (http://webs.wichita.edu/?u=engineering&p=/engineerof2020).

IV. Timeline and Fees for Proposed New Degree

Once the proposal is approved by various WSU committees, it will be submitted to the Kansas Board of Regents for final approval during Spring 2011. The proposed degree is planned to be offered Fall 2011. The following schedule may be adjusted based on the review/approval process:

Faculty Senate Review	November 2010–January 2011
KBOR Review and Approval	February 2011–April 2011
First Industrial Advisory Board Meeting	May 2011
Program Advertisement	June 2011
Acceptance of Student Applications	June 2011–August 2011
Notification of New Program to ABET*	August 2011
Advertising/Hiring of New Faculty	July 201 –December 2011
Formation of Engineering Technology Core Faculty	July 2011–December 2011
Laboratory Development	July 2011–December 2011
Notification of Admission	July 2011–August 2011
Program Initiation	August 2011
Catalog Printing	February 2012

**ABET-TAC visit planned for sixth year after program is initiated.*

Fees

To establish ABET-TAC accreditation for the Engineering Technology program, fees will be approximately $9,630 plus an annual maintenance fee of $475.