Program Review

for the

Bachelor of Science in Construction Engineering

at

Texas A&M University-Commerce

Commerce, Texas

based upon

ABET
Self-Study Report

January 2013

Self-Study Report for the Bachelor of Science in Construction Engineering
Texas A&M University-Commerce

BACKGROUND INFORMATION

A. Contact Information

Primary pre-visit contact for the program:

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B. Program History

Texas A&M University-Commerce (A&M-Commerce) is the fifth oldest state university in Texas. It serves the Northeast Texas region bordered by Oklahoma to the north, Arkansas and Louisiana to the east, and the Dallas-Fort Worth (DFW) Metroplex to the west. A&M-Commerce offers majors at the undergraduate, master's and doctoral levels. Approximately 89% of the 12,000 students in the A&M-Commerce student body come from a 38-county area in East and Northeast Texas. Many of the 272 school districts within this region are rural with a majority of financially disadvantaged students. The Texas Education Agency classified 54.8% of these school districts as either rural or non-metropolitan schools. In addition to the area high schools, A&M-Commerce actively recruits transfer students from the nearly 140,000 students in community/junior colleges within the university's service area.

Building upon a successful Construction Science program of more than 20 years, A&M-Commerce received Texas Higher Education Coordinating Board (THECB) approval for a Bachelor of Science in Construction Engineering on January 28, 2010 and Southern Association of Colleges and Schools (SACS) approval on October 8, 2010. Full implementation of the Construction Engineering program occurred in the Spring 2011 semester. This is the first general review conducted for the Construction Engineering program. The Bachelor of Science in Industrial Engineering (BSIE) has been accredited since 2004.

The Construction Engineering program is part of the College of Science, Engineering, & Agriculture. In addition to the Department of Engineering & Technology, the college is comprised of Physics & Astronomy, Chemistry, Biological & Environmental Sciences, Computer Science, Mathematics, and Agricultural Sciences. This structure allows for the alignment of and synergy between STEM programs.

C. Options

The Construction Engineering program does not have any options, tracks, or concentrations. Construction Engineering students are encouraged to pursue a Mathematics Second Major.

D. Organizational Structure

The Construction Engineering program is housed under the Department of Engineering & Technology. The Department is one of seven departments under the College of Science, Engineering, & Agriculture. Figures 1-1 thru 1-4 show the organizational structure for the Construction Engineering program.

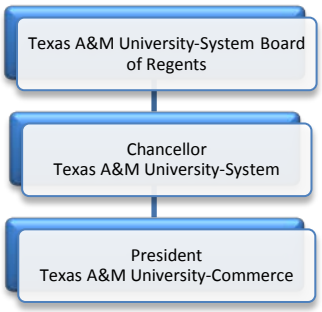

Figure 1-1: Texas A&M University-System/Texas A&M University-Commerce Organizational Structure

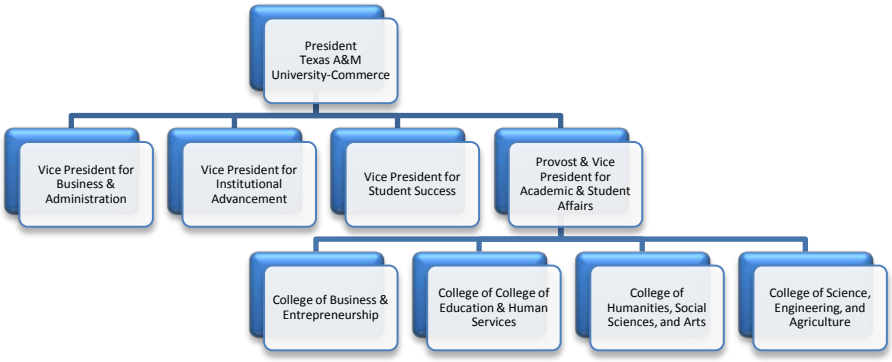

Figure 1-2: University Organizational Structure

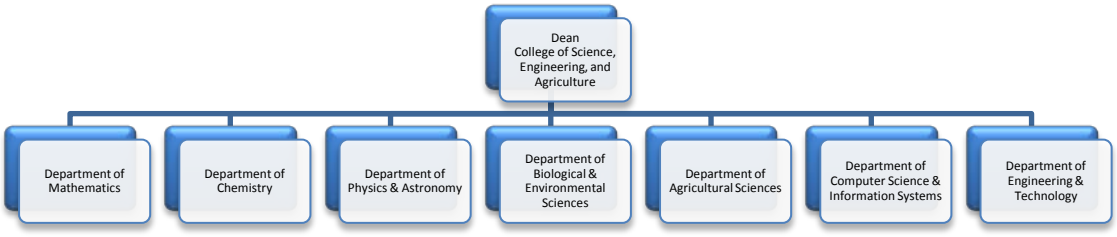

Figure 1-3: College of Science, Engineering, & Agriculture Organizational Structure

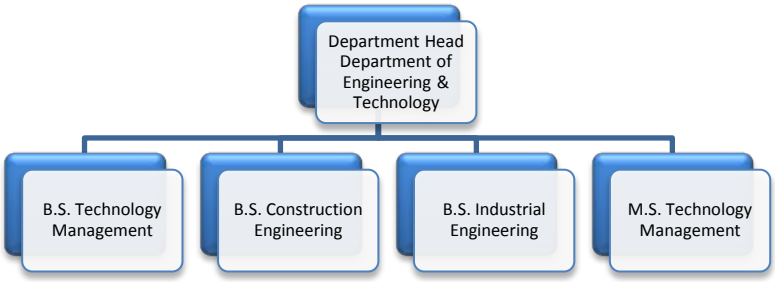

Figure 1-4: Department of Engineering & Technology Organizational Structure

E. Program Delivery Modes

The Construction Engineering degree program is offered on-campus in a traditional lecture/laboratory format. Only one departmental course in the Construction Engineering curriculum is offered in an online format. The university utilizes the eCollege platform for online delivery. eCollege is a comprehensive online learning management system. Features of eCollege can and are used to enhance face-to-face instruction. While the university offers some of the general education, or university studies, courses in an online format, with the exception of the one departmental course, students can complete the entire degree in an on-campus face-to-face format.

A majority of the Construction Engineering courses are offered in the morning or afternoon. Two of the departmental freshman courses are offered in the evening to minimize the number of schedule conflicts with the required university studies courses students typically take during their freshman year. Currently no weekend courses are offered.

F. Program Locations

A&M-Commerce's main campus is located in Commerce, Texas, which is approximately 50 miles northeast from Dallas, Texas. In addition, the university has teaching sites in McKinney, Rockwall, Mesquite, Corsicana, Midlothian, and Dallas. Construction Engineering courses are only offered on the main campus in Commerce.

To meet the escalating need for engineering graduates, recruiting efforts have to reach qualified students beyond the pool of college-ready high school graduates who have chosen to pursue a career in an engineering field. Relying solely on a "traditional" recruitment model will exclude a large cohort of students who have the ability and initiative to be successful, but not necessarily the resources or the geographical flexibility to pursue an engineering degree at a flagship institution. There are over 140,000 students in community and/or junior colleges in the A&M-Commerce service area. Based upon data from the university's Institutional Research department, 72% of the students coming to A&M-Commerce have transfer credits from a community/junior college. Every public college and university in Texas is required by law to have a core curriculum of at least 42 credit hours. The intent of the core is to provide a set of courses common to any baccalaureate degree. Core curricula are designed to offer students flexibility in selecting courses that align with their individual educational goals. However, courses that satisfy

the core requirements do not necessary satisfy the degree requirements for a specific major. For example, students can be a "core completer" with College Algebra, which will not apply towards an engineering degree. Experiences at TAMU-C have shown that these students often elect to pursue another major that allows the transfer of all their core credits. To address this growing issue, the Department of Engineering & Technology developed innovative 2+2 transfer agreements with partner 2-year institutions. Students who follow and successfully complete the courses in the 2+2 agreement, not only become core completers but also gain assurance their courses will transfer seamlessly into the Construction Engineering program.

G. Deficiencies, Weaknesses or Concerns from Previous Evaluation(s) and the Actions Taken to Address Them

This is the first general review conducted for the Construction Engineering program. The Bachelor of Science in Industrial Engineering (BSIE) has been accredited since 2004.

H. Joint Accreditation

There is not a joint accreditation by more than one commission. The Bachelor of Science in Construction Engineering is accredited by the Engineering Accreditation Commission of ABET.

GENERAL CRITERIA

CRITERION 1. STUDENTS

A. Student Admissions

Prior to being admitted to the Construction Engineering program, students must meet the minimum University admission standards. Steps to and eligibility for admission to undergraduate programs of the University, including Construction Engineering, are detailed in the Administrative Procedures section of the undergraduate catalog. The catalog is only available in an electronic format, available at the following web site (http://catalog.tamuc.edu/).

1. Requirements for Undergraduate Admissions

Application for Admission. The application for admission and other necessary forms may be obtained from the Office of Undergraduate Admissions or may be filed electronically at http://web.tamuc.edu/admissions/getstarted. The Apply Texas Application at www.applytexas.org may also be submitted.

Official Transcript. High school transcripts should show the units completed, the grades earned, student's diploma plan, the date of graduation, and the rank in class. Admissions acceptance will be tentatively granted on the basis of the completion of junior year.

An applicant who attended another academic institution or any institution for vocational or advanced education, if only for a short period of time, must include this work as a part of the admission application information.

Admission Test Results. All applicants for admission who have passed fewer than 21 semester hours of transferable academic work must submit scores from either the American College Test (ACT) or the College Entrance Examination Board Scholastic Aptitude Test (SAT). The A&M-Commerce code for ACT is 4088 and the A&M-Commerce code for SAT is 6188.

Social Security Number/Campus Wide ID Number (CWID). A new campus wide ID number is used as a permanent student identification number. The campus wide ID number is generated for all students admitted to the University. Campus Wide ID numbers are specific to Texas A&M University-Commerce. Students will be assigned a CWID when they submit an official application for admission. Social Security numbers will continue to be printed on transcripts as a means of identifying students. Application for Social Security numbers may be obtained from any post office.

Application Deadlines. A&M-Commerce application dates are as follows:

Fall Priority Deadline	March 1
Fall Final Deadline	August 1
Spring Priority Deadline	November 1
Spring Final Deadline	December 1
Summer I Priority Deadline	April 1
Summer I Final Deadline	May 1
Summer II Priority Deadline	April 1
Summer II Final Deadline	June 1

Students may review the status of applications by using the myLeo system (myLeo is the University's student account management system).

2. Freshman Admission Requirements

First time freshmen may be admitted to Texas A&M University-Commerce by one of the following ways:

- First time freshmen who graduate in the top 25% of their graduating class from an *accredited* public or private high school in Texas are automatically admitted, but must submit ACT or SAT scores. To qualify for this automatic admission, high school graduation must be in one of the two years preceding the academic year for which the applicant is applying.
- First time freshmen who have an SAT combined critical reading and math score of 950 or higher.
- First time freshmen who score a minimum of 20 ACT or higher.

Exceptional application categories include:

- First time freshmen applicants possessing the GED will be considered for admission only after their senior high school class graduates and they have reached the age of 18. A minimum of 20 ACT or 950 SAT (combined Critical Reading and Math) is required for admission.
- First time freshmen applicants graduating from a nonaccredited school will be required to achieve a minimum score of 20 ACT or 950 SAT (combined Critical Reading and Math).
- First time freshmen who are home schooled will be required to achieve a minimum score of 20 ACT or 950 SAT (combined Critical Reading and Math).
- First time freshmen whose high school graduation is more than five years preceding the academic year for which they are applying, will be required to submit a satisfactory score of 14 on the Reading Comprehension Test of the American College

Testing program (ACT), administered by the Office of Testing and Evaluation Services at Texas A&M University-Commerce. Students in this five-year category may also submit satisfactory scores from an ACT/SAT test administered within the last five years.

Applicants who do not meet automatic admission requirements based on ranking and/or SAT/ACT scores will be reviewed by the university's Admission Committee. The committee will consider other factors including academic performance in the high school, socioeconomic status, extracurricular involvement, and performance level of high school/district or any other information that might be helpful. To be reviewed by the Admissions Committee the applicant should submit a personal statement and at least two letters of recommendation. Information should be sent to the Director of Undergraduate Admissions.

3. Department of Engineering & Technology Admission Requirements

Programs under the Department of Engineering & Technology, including the Construction Engineering program, do not have any requirements for being admitted to the program beyond the criteria established by the University. However, there are program specific requirements for full participation in the Construction Engineering program, which are specified in the undergraduate catalog and the department web page.

(http://catalog.tamuc.edu/preview_entity.php?catoid=15&ent_oid=453&returnto=595)

(http://www.tamuc.edu/academics/colleges/scienceEngineeringAgriculture/departments/engineeringTechnology/programs/default.aspx).

These requirements include:

- Engineering & Technology majors are required to complete the University Studies requirements and major area requirements.
- A grade of "C" or better is required in all Engineering & Technology major courses. Courses must be repeated if a grade of "C" or better is not earned in the course.

In addition, Construction Engineering courses have prerequisites and/or corequisites that students must satisfy before they are allowed to register for courses in the major.

4. Undergraduate Admissions Application Process

The undergraduate admissions application process is outlined on the following Admissions Office web page:
(http://web.tamuc.edu/admissions/stepsToApplyUndergraduate/default.aspx).

The application process steps include:

- Apply online by completing the ApplyTexas Application at www.applytexas.org and list A&M-Commerce as a recipient. The ApplyTexas application is used to apply to any public 2-year or 4-year institution in the state of Texas. A non-refundable $40 enrollment fee is charged to the student's account upon enrollment in the first

semester at A&M-Commerce. This fee is applied to all undergraduate applicants (freshmen, transfers, and readmits).

- Send official high school transcripts or GED scores, and an official copy of your SAT or ACT test scores to the Admissions Office at A&M-Commerce.
- After being accepted, attend a mandatory two-day orientation session. The orientation sessions offer students the opportunity to 1) meet with the success coaches (freshman advisors), 2) register for classes, 3) acquire a student ID, 4) pay tuition and fees, and 5) learn about student services and resources.

  The Department of Engineering & Technology seeks to actively engage each incoming freshman during their orientation. Students are introduced to and meet with the department's engineering mentor/transfer liaison, Department Head, and/or faculty advisors during a breakfast hosted by the College of Science, Engineering, and Agriculture. Students are provided with a copy of the degree plan and advised on what courses they should take prior to meeting with their success coaches to register for courses. As needed, the faculty advisors and/or Department Head meet with the success coach and student during the registration session at the orientation to resolve any issues regarding courses in the degree.

  It should be noted that in many cases, students attending the orientations have been contacted by the engineering mentor/transfer liaison and/or faculty prior to the orientation. The department developed and has implemented a systematic process for contacting potential students who have expressed interest in engineering.

B. Evaluating Student Performance

Student success is an integral part of the fabric of the A&M-Commerce. The following guiding principle speaks to the commitment of A&M-Commerce to student success.

> *Student Success: Pursue and implement effective, research-based strategies that provide all students the resources, support, and high-quality instruction they need to achieve their goal of earning a college degree.*

A student's academic performance and progress is monitored at the university, college, and department levels. The synergistic approach is designed to give the student the services, support, and resources needed to reach their academic goals.

1. University

The **Student Access and Success One Stop Center** was created to better serve students by providing as many resources as possible in one location. Resources include, but are not limited to, 1) tutoring services, 2) career development, 3) counseling center, 4) child care, and 5) international student services. In addition to support services, the university has established a process to monitor student progress and intercede, when possible, to ensure student success.

The **University College** was established to provide students access to guidance and services necessary to be successful at A&M-Commerce. Regardless of their major, students belong to the University College until they complete their first academic year at A&M-Commerce, complete 24 semester hours of college credit courses, complete the University's basic skills requirements, and declare a major. While they are in the University College, students are assigned a **Success Coach.** Success Coaches serve as academic advisors, as well as assisting students with financial, personal, and career counseling. The goal of the University College is to assist students into college life and to provide guidance until they transition to working directly with their faculty advisor in their major.

While students are in the University College, there are a number of formative assessment points designed to trigger vital interventions to assist students with issues that affect academic performance. Prior to the semester mid-term, faculty submit names of students who are earning a grade of "D" or "F". Success Coaches contact these students to try and determine what issues are causing the poor academic performance and to take the corrective action deemed necessary to resolve and/or minimize these issues. In addition to the predetermined monitoring events, faculty can take preemptive action anytime during the semester by issuing an **Academic Alert.** When submitted, Success Coaches are alerted immediately via email, allowing the situation to be reviewed and corrective actions taken.

Other departments, such as the athletic department and Trio programs, require additional progress reports, submitted by faculty, that are over and above the University College's processes and procedures.

The **Registrar's Office** maintains student academic records in a secure student management system. Records are available to students and faculty advisors. These records are used during periodic academic reviews as a means of monitoring a student's progress and ensuring they remain on track to graduate. Upon submission of the graduation paperwork reviewed and submitted by the Department and College, the **Graduation Coordinator's Office** verifies that the student has fully satisfied all of the degree requirements.

2. College

The College of Science, Engineering, and Agriculture is involved indirectly with evaluating student performance and progress. The college administrative support staff is responsible for inputting declared majors into the student management system. College support staff also notifies department heads and/or lead faculty of students who have filed for graduation. The Dean's office reviews and processes all of the graduation checkout paperwork after it is submitted by the department.

3. Department

The Department of Engineering & Technology has the primary responsibility of evaluating engineering students' performance and progress. The department faculty and staff actively engage and monitor student performance and progress throughout the time they are in the program.

Upon declaring their major as Construction Engineering, students are assigned to a department **faculty advisor**. For incoming freshman, they are also assigned to a university **Success Coach** as well as the department faculty advisor. The Construction Engineering faculty advisor and Success Coaches work closely to ensure students are given the best opportunity to successfully complete the university studies as well as the Construction Engineering degree requirements. This provides for a smooth transition when the student is transitioned into the department from the University College. For transfer students, their first contact is typically the department's **Engineering Mentor/Transfer Liaison**. In many cases, the student has worked with or has been in contact with the Transfer Liaison prior to coming to A&M-Commerce. Upon enrolling, the student is transferred to the CONE faculty advisor.

Construction Engineering students meet with the CONE faculty advisor face-to-face each semester to review their progress and plan course schedules for the next semester. The assumption at the time of the initial advising session is students will successfully pass and will take the next sequenced courses. After final grades are posted at the end of the semester (Fall, Spring, and Summer), course rosters are checked for the enrolled students who did not pass the required prerequisite(s), if any. Students lacking the required prerequisites are contacted and schedules are reworked. Academic progress is documented and maintained internally using the **CONE curriculum flowchart**, Attachment 1-1, and formally within the university's student degree audit system, **DegreeWorks**, Attachment 1-2.

Prior to entering their last semester, the CONE faculty advisor meets with the student to review their transcript and degree evaluation/audit. If it is deemed the individual will be eligible for graduation at the end of the semester, the faculty advisor and student complete the Department of Engineering & Technology **graduation checkout form**, provided as Attachment 1-3 at the end of this chapter. The department graduation check list is the first opportunity to ensure the student has met university, college, and department graduation requirements. The student's records are then reviewed by the Department Head and then the Dean's office before it is submitted to the Graduate Coordinator in the Registrar's office.

4. Course Prerequisites

Course prerequisites are established by the program faculty as a means of ensuring students take courses in a prescribed manner, which provides the greatest opportunity for success. Course prerequisites are identified in the university catalog as well as shown graphically on the CONE curriculum flowchart. The prerequisites are programmed into

the degree audit system, prohibiting students from registering for courses without the required prerequisite, unless a waiver is granted from the department. Students not meeting prerequisites are not allowed to take the course unless the circumstance is beyond the student's control such as being caught in a curriculum change, in which case the faculty teaching the course and department head makes the final decision if a student is allowed to take the course.

C. Transfer Students and Transfer Courses

There are 50 public community/junior college districts in the state of Texas, with over 700,000 students according to the Texas Association of Community Colleges. A&M-Commerce actively recruits transfer students from the more than140,000 students in community/junior colleges within the university's service area. Based upon data from the Institutional Research department at A&M-Commerce, 72% of the undergraduate students at the university entered with transfer credits from a Texas community/junior college.

Prior to being admitted to the Construction Engineering program, transfer students must meet the minimum University admission standards. Steps to and eligibility for admission to undergraduate programs of the University, including Construction Engineering, are detailed in the Administrative Procedures section of the undergraduate catalog. The catalog is only available in an electronic format, available at the following web site (http://catalog.tamuc.edu).

1. Transfer Admissions Requirements

A transfer student is defined as a student seeking first-time admission that previously attended an accredited institution of higher learning and is eligible to return to that institution. A transfer student will have 21 or more hours (excluding developmental courses). Students with fewer than 21 hours will be considered for admission on the basis of their ACT or SAT test scores, rank in high school class, and must have a cumulative GPA of 2.0 (on a 4.0 scale) on all college work attempted.

Transfer students must meet the following requirements for admission:

- File application for admission to the Office of Undergraduate Admissions by the deadline published in the official University Calendar found in the undergraduate catalog or in the schedule of classes for each semester.
- Submit an official transcript from each institution previously attended. A transcript is considered official only if received directly from the sending institution or if hand delivered, in a sealed registrar's envelope. Transcripts should be submitted to the Office of Undergraduate Admissions.
- Have a cumulative GPA of 2.0 (on a 4.0 scale) on all college work attempted.

Students on Academic Suspension from another institution are ineligible for admission to A&M-Commerce until their designated suspension period has passed. When the period of suspension has passed, the student may be considered for admission

Students may review the status of applications by using the myLeo system (myLeo is the University's student account management system).

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- A grade of "C" or better is required in all Engineering & Technology major courses. Courses must be repeated if a grade of "C" or better is not earned in the course.

In addition, Construction Engineering courses have prerequisites and/or corequisites that students must satisfy before they are allowed to register for courses in the major.

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The undergraduate admissions application process is outlined on the following Admissions Office web page:
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- Send official college transcripts to the Admissions Office at A&M-Commerce.
- After being accepted, attend a mandatory two-day orientation session. The orientation sessions offer students the opportunity to 1) meet with the success coaches (freshman advisors), 2) register for classes, 3) acquire a student ID, 4) pay tuition and fees, and 5) learn about student services and resources.

The Department of Engineering & Technology seeks to actively engage each incoming transfer student during their orientation. Students are introduced to and meet with the department's engineering mentor/transfer liaison, Department Head, and/or faculty advisors during a breakfast hosted by the College of Science, Engineering, and Agriculture. Students are provided with a copy of the degree plan and are provided assistance to register for appropriate courses.

It should be noted that in many cases, students attending the orientations have been contacted by the engineering mentor/transfer liaison and/or faculty prior to the orientation. The department developed and has implemented a systematic process for contacting potential students who have expressed interest in engineering.

4. Transfer Credit

A&M-Commerce accepts transfer credit from regionally accredited institutions on course by course basis. The **Office of Undergraduate Admissions** reviews transfer courses for content, level, and credit hours. Information regarding transfer credit is outlined on the Admissions Office web page at:
http://web.tamuc.edu/admissions/transferAdmissions/default.aspx

Transfer credit is posted to a student's record under the following prescribed conditions:

- Junior/community college courses transfer as lower-division (freshman or sophomore) credit. While all transfer credit hours will be evaluated and posted to the student's academic record a maximum of 66 semester hours from a junior/community college will transfer.
- Courses from senior institutions transfer at the same level as they were taken. A minimum of 60 hours must be completed at A&M-Commerce or another senior institution. For degree completion at least 25% of the degree credit hours must be earned through A&M-Commerce and 24 of the final 30 hours must be completed in residence.
- If a transfer course is determined to be equivalent to an internal course, the equivalent A&M-Commerce course number is posted on the student's academic record.
- Transfer courses for which there is not an equivalent A&M-Commerce course are accepted for generic credit. At the discretion of the major department, these courses may fulfill specific degree requirements.

  A student may request a departmental review of course equivalency. It is the responsibility of the student to provide supporting materials, such as a course description, syllabus, and/or textbook to validate the equivalency of the course. The faculty advisor and department head reviews the courses on a case-by-case basis. Transfer credit is awarded in compliance with university academic standards and procedures.
- Remedial or developmental courses are not transferable and are rejected from GPA calculation.

- Courses completed with a grade of "D" are accepted in transfer and may be used to satisfy core curriculum requirements or as elective credit. Courses completed with a grade of "D" do not satisfy degree requirements in the Construction Engineering major.
- Courses taken at other institutions are not included in the calculation of the institutional A&M-Commerce grade point average. The transfer grade point average is used to determine admissibility to the University and scholarship eligibility.
- Credit by examination earned at other institutions is treated as transfer credit only if the sending institution records the credit on the student's transcript with a regular catalog course number.
- Transfer courses taken under a quarter hour system are converted to semester hours. One quarter hour is equal to 2/3 semester hour.
- Total transfer hours accepted may be increased or decreased to reflect correction to prior evaluation and evaluation of additional transfer courses completed to ensure compliance with university academic standards and procedures.

A&M-Commerce participates in the **Texas Common Course Numbering System** (TCCNS). TCCNS is a cooperative partnership between Texas community/junior colleges and universities. TCCNS provides a shared, uniform set of course designations to assist students and their advisors in determining course equivalencies and applicability of transfer credits on a statewide basis. The **Lower-Division Academic Course Guide Manual (ACGM)** is the official list of approved courses for general academic transfer that may be offered for state funding by public community and technical colleges in Texas. The common courses listed in the ACGM are numbered to correspond to TCCNS. The ACGM can be found at the following Texas Higher Education Coordinating Board (THECB) web site: http://www.thecb.state.tx.us/AAR/UndergraduateEd/WorkforceEd/acgm.htm

5. State-Mandated and Volunteer Agreements

State-mandated articulation requirements are defined under the Texas Administrative Code, Title 19, Part1, Chapter 4, Subchapter B Transfer of Credit, Core Curriculum, and Field of Study Curricula.

Every public college and university in Texas is required by law to have a **core curriculum** of at least 42 credit hours. The intent of the core is to provide a set of courses common to any baccalaureate degree. Core curricula are designed to offer students flexibility in selecting courses that align with their individual educational goals. The required components of the core include communications, mathematics, natural sciences, humanities, visual/performing arts, US history, political science, and social/behavioral science. By law, students who complete the core at one public institution can transfer the block of courses to another public institution, replacing the receiving institution's core curriculum. A&M-Commerce's core curriculum is referred to as **University Studies**, which is defined and outlined in the undergraduate catalog (http://catalog.tamuc.edu/content.php?catoid=15&navoid=598).

A **Field-of-Study** (FOS) curriculum is a set of courses intended to satisfy the lower division requirements for a given academic discipline. Texas has established more than 10 Field-of Studies, including computer science, engineering, and engineering technology. The Engineering FOS attempted to encompass a common set of courses for all engineering disciplines. As a result, all of the courses do not apply to every engineering program. It is left to the student to determine which courses are applicable to the program at a targeted receiving institution. The components of the Engineering FOS include calculus, differential equations, linear algebra, chemistry, physics, electrical circuits, and engineering mechanics. In the case of the Construction Engineering program at A&M-Commerce, of the possible 43 hours a student could take, 27 hours apply to the degree.

The **Texas Voluntary Transfer Compacts for Engineering** curricula were developed in conjunction with faculty from two-year and four-year institutions. The purpose of the compacts is to provide guidance to students who plan to transfer into an engineering program at a senior institution. Compacts have been developed for civil, electrical, industrial, and mechanical engineering. A&M-Commerce is a university participant for civil as well as industrial engineering. Students who successfully complete courses shown in Attachment 1-4 will be able to transfer the course credit hours to A&M-Commerce upon successful admission to the institution, if the courses completed are part of a CONE degree.

D. Advising and Career Guidance

1. Advising

Student success and academic advising begins before the student arrives at A&M-Commerce. Typically, the initial contact with a potential student is made by the department's **Engineering Mentor/Transfer Liaison.** Following this contact, the Engineering Mentor/Transfer Liaison corresponds with the individual through a series of three electronic mailings. The first provides information about the degree programs and career fields as well as general information about applying to the university. The second deals with the rigors of an engineering program and what the student should be doing in advance to be successful, especially in the area of mathematics. The final mail out provides information about the department's articulation agreements and transferring credits. In addition to the electronic correspondence, the Engineering Mentor/Transfer Liaison serves as a clearing center for student questions, making sure they are routed to the appropriate person, both at the department, college, and university levels.

Upon declaring their major, Construction Engineering students are assigned to a department **faculty advisor**. For incoming freshman and transfer students with less than 30 credit hours, they are also assigned to a university **Success Coach** as well as the department faculty advisor. Success Coaches serve as academic advisors, as well as assisting students with financial, personal, and career counseling. The goal of the University College is to assist students into college life and to provide guidance until they

transition to working directly with their faculty advisor in their major. Freshmen remain under the guidance of the Success Coach until they have completed 1) their first academic year, 2) 24-hours of credit bearing courses, 3) University's basic skills requirements, and 4) declare a major. Transfer students with less than 30 hours, remain assigned to a Success Coach until such time that they 1) complete the University's basic skills requirements, 2) declare a major, and 3) complete 30 semester hours of credit bearing courses. The Construction Engineering faculty advisor and Success Coaches work closely to ensure students are given the best opportunity to successfully complete the university studies as well as the Construction Engineering degree requirements. This provides for a smooth transition when the student is transitioned into the department from the University College.

Construction Engineering students are asked to meet with their faculty advisor face-to-face each semester to review their progress and plan course schedules for the next semester. Freshmen and first-year transfer students are required to before a registration block is removed. After final grades are posted at the end of the semester, course rosters are checked by the faculty advisor for enrolled students who did not pass the required prerequisite(s), if any. Students lacking the required prerequisites are contacted and schedules are reworked. Academic progress of each student is documented and maintained on the **CONE curriculum flowchart** and **DegreeWorks,** provided as Attachment 1-1 and 1-2 at the end of this chapter. These documents provide a formal record for the student and department as to the progress a student is making towards graduation.

Students remain with the same department faculty advisor throughout the duration of the degree program. Prior to entering their last semester, the CONE faculty advisor meets with the student to review their transcript and degree evaluation/audit. If it is deemed the individual will be eligible for graduation at the end of the semester, the faculty advisor and student complete the Department of Engineering & Technology **graduation checkout form**, provided as Attachment 1-3 at the end of this chapter. The student's records are then reviewed by the Department Head and then the Dean's office before it is submitted to the Graduate Coordinator in the Registrar's office.

2. Career Guidance

The office of **Career Development** is part of the **Student Access and Success One Stop Center.** Programs and services offered through Career Development include, but not limited to, resume consultation, mock interviews, career assessment, job search assistance, on-campus interviews, career workshops, and job fairs.

Career guidance is offered through the department's student organizations and events. Departmental student organizations are encouraged to bring in industry representatives to speak to their organizations and/or attend career related programs offered through professional societies. The **Student Construction Association (SCA)** is student organization for construction students in the department. The department hosts an annual **Engineering Day** during the national engineering week in February. The all day

program consists of guest industry speakers as well as a networking lunch with upper level students and industry representatives. The Construction Engineering faculty schedule a variety of on-site tours with regional construction firms to expose students to companies as well as the construction industry.

E. Work in Lieu of Courses

A&M-Commerce awards undergraduate credit on the basis of a variety of local and nationally available examinations. Information related to credit by examination is outlined in the university undergraduate catalog as well as on the following Office of Student Assessment & Evaluation web page:
http://web.tamuc.edu/academics/testingOffice/creditByExam/default.aspx

All credits by examination are subject to the following guidelines:

- Credit earned by examination may not be used to reduce in residence or advanced hour degree requirements established by A&M-Commerce.
- Credit earned by examination is not included in the computation of grade point averages.
- It is the responsibility of the student to present official scores to the Office of Student Assessment for submission of the appropriate paperwork to the Office of the Registrar for posting of credit on the student's transcript. Credits earned by exam will be recorded on the student's permanent record upon successful completion of at least 12 credit hours of academic work at Texas A&M University-Commerce.
- Credit for courses by exam received at another college or university will be accepted in transfer upon receipt of an official transcript.
- Standards for awarding credit by exam for courses are set by the academic department.
- Students may repeat a course for which credit was earned by exam by enrolling in a regularly scheduled class. The grade will replace the credit earned by examination.
- Fees for credit by examinations have been established by the Student Assessment Office. Fees vary by examination.

The examinations include: 1) the Advanced Placement Examination (AP); 2) the College Level Examination Program (CLEP); 3) the International Baccalaureate (IB) program; 4) the Defense Activity for Non-Traditional Educational Support Examinations (DANTES); 5) locally administered departmental exams.

1. Advanced Placement (AP)

The Advanced Placement (AP) program provided by the College Board enables students to enroll in challenging college-level studies while they are still in high school and to obtain college placement, credit, or both, on the basis of their performance on rigorous AP examinations. AP exams are given nationally at designated high schools during the month of May. AP exams are graded on a scale of 0-5. A score of 3 or higher is needed for credit. A matrix of all credit-by-exam programs including the exam titles, course

equivalents, number of semester hours credited, and required scores can be obtained through the Office of Student Assessment & Evaluation.

2. **College Level Exam Program (CLEP)**

The College Level Exam Program (CLEP) provides students of any age with the opportunity to demonstrate college-level achievement through a program of exams in undergraduate college courses. The CLEP program is administered by the College Board and helps students enroll in advanced courses more quickly. CLEP offers exams which cover areas of Business, Composition and Literature, Foreign Languages, History and Social Studies, Science and Mathematics. CLEP exams are scored on a scale of 0-80. Upon making an acceptable score, as determined by A&M-Commerce, the student is awarded a set number of credit hours in a course equivalent to the subject area in which they took the CLEP exam. A matrix of all credit-by-exam programs including the exam titles, course equivalents, number of semester hours credited, and required scores can be obtained through the Office of Student Assessment & Evaluation

3. International Baccalaureate (IB)

The International Baccalaureate (IB) program is a rigorous pre-university program available worldwide through the International Baccalaureate Organization leading to assessment in six subject areas (Best Language, Second Language, Individuals and Societies, Experimental Science, Mathematics and Computer Science, and the Arts). The curriculum encourages critical thinking, community service, individual research, and inquiry into the nature of knowledge. The subject exams are scored on a 0-7 scale by a panel of international examiners. A minimum score of 4 is required to be considered for credit. A matrix of all credit-by-exam programs including the exam titles, course equivalents, number of semester hours credited, and required scores can be obtained through the Office of Student Assessment & Evaluation

4. DANTES Subject Standardized Tests (DSST)

The DSST program is a nationally recognized testing program that gives the opportunity to receive college credit for learning acquired outside a traditional college classroom. TAMU-Commerce only offers 3 hours of credit for human resources DANTES exam.

5. Local Credit-by-Exam

Credit-by-Exam can be granted through exams designed by departments at A&M-Commerce. By receiving a satisfactory score, students can earn 3 college credits toward a college degree for each exam taken.

The Department of Engineering & Technology does not have any local credit-by-exams for the Construction Engineering program.

F. Graduation Requirements

A&M-Commerce offers 13 recognized degrees at the undergraduate level, including the Bachelor of Science. The general requirements for a Bachelor of Science are defined in the University's undergraduate catalog. The candidate for a Bachelor of Science must meet all of the following requirements:

- **University Studies.** A minimum of 43 semester hours in general studies is required for a Bachelor of Science degree.
- **Advanced Level Courses.** A student must complete at least 36 semester hours at the advanced level. Credits transferred from a junior college or community college may not be used to satisfy the advanced coursework requirement. A minimum of 60 semester hours must be completed at A&M-Commerce or another senior level institution. Specific initiatives targeted at facilitating community college transfer to a four-year university are exceptions to this rule.
- **Institutional Requirements.** For degree completion, at least 25 percent of credit semester hours must be earned through instruction at A&M-Commerce, as required by the Southern Association of Colleges and Schools (SACS). Furthermore, at least 24 of the final 30 semester hours must be taken at A&M-Commerce. Extension and correspondence credits may be used to satisfy residence requirements.
- **Fitness and Recreational Activity Requirements.** Two one-semester-hour courses in fitness and recreational activity are to be completed during the freshman and sophomore years at A&M-Commerce. For other options, see the *University Studies Requirements.*
- **Special Major Requirements.** In addition to meeting the above minimum requirements, the student must complete any other special requirements as outlined for each major subject. A minimum grade of "C" will be required in all undergraduate major courses. This includes all transfer and A&M-Commerce courses in the student's major area of study.
- **Semester Hours**. A student must complete a minimum of 120 semester hours, exclusive of English 100 and Math 131, with the following grade point requirements:
    - an overall 2.00 average;
    - a 2.00 average on all work completed at A&M-Commerce;
    - a 2.00 average in each major and minor; and
    - a 2.00 average at A&M-Commerce in each major and minor.
- **Correspondence and Extension Courses.** No more than 30 semester hours of extension and correspondence combined may apply toward a degree. No more than 18 of these 30 hours may be completed by correspondence. A maximum of 18 semester hours of advanced credit in a major field, when prerequisites have been satisfied, may be earned and counted toward a baccalaureate degree from this institution. Note: The grade from a correspondence course will apply to the A&M-Commerce GPA.

An entering student must meet the degree requirements specified in the current or subsequent catalog. A student who fails to graduate within five years after admission will be required to

meet the degree requirements of a subsequent catalog that is within five years of currency at the time of his graduation.

1. Bachelor of Science in Construction Engineering

Candidates for the Bachelor of Science in Construction Engineering must meet all of the university requirements for a Bachelor of Science as defined in the previous section as well as major area requirements. The required courses in the major, required support courses, suggested curriculum outline, and course descriptions are provided in the University's undergraduate catalog. In addition to the university studies, required courses in the major include:

Required courses in the major

CONE 211 – Statics

CONE 212 – Dynamics

CONE 221 – Construction Materials & Methods

CONE 231 – Construction Estimating

CONE 331 – Mechanics of Materials

CONE 341 – Engineering Hydrology & Hydraulics

CONE 351 – Field Engineering & Surveying

CONE 411 – Steel & Concrete Design

CONE 412 – Structural Analysis & Design

CONE 421 – Construction Safety

CONE 422 – Construction Engineering Management

CONE 423 – Contracts and Specifications

CONE 425 – Construction Planning, Scheduling, and Control

CONE 431 – Sustainable Construction Methods & Processes

CONE 432 – Soil Engineering

CONE 471 – Construction Engineering Internship

IE 201 - Elementary Engineering Analysis

IE 207 - Engineering Economic Analysis

IE 211 - Engineering Probability and Statistics

IT 111 - Computer Aided Design (CAD)

IT 340 or MGT 340 - Quality Management and Improvement

Required Support Courses

CHEM 1411 - General and Quantitative Chemistry I

ECO 2301 - Principles of Macro Economics* **or**

ECO 2302 - Principles of Micro Economics*

MATH 2413 - Calculus I*

MATH 192 - Calculus II

MATH 315 - Differential Equations

MATH 335 - Linear Algebra

PHYS 2425 - University Physics I*

PHYS 2426 - University Physics II*

* *These courses should be used to satisfy the University Studies Requirements in Social and Behavioral Science, Natural Sciences, and Mathematics, respectively; otherwise, the credit hours required to earn the B.S. in CONE will exceed 127.*

Construction Engineering majors are required to complete the University Studies requirements and major area requirements. For a course to transfer into the Construction Engineering major, a grade of "C" or better must be earned in the course. A grade of "C" or better is required in all Construction Engineering major courses. Courses must be repeated if a grade of "C" or better is not earned in a major or required support course.

The required course sequence for the Bachelor of Science in Construction Engineering is shown in Attachment 1-1 at the end of this chapter.

G. Transcripts of Recent Graduates

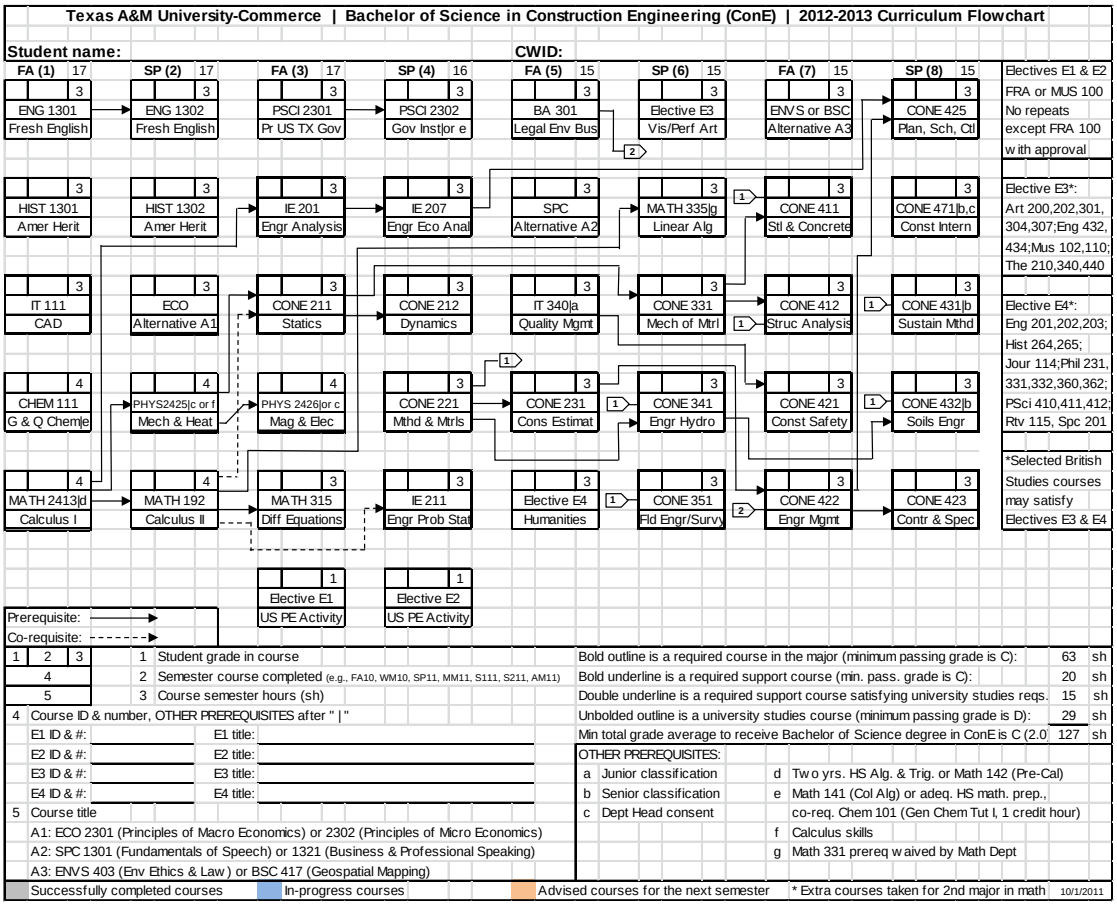
Transcripts of recent graduates are available upon request. Information related to the interpretation of the transcript is printed on the back side of an official transcript. There are no program options under the Bachelor of Science in Construction Engineering. However, a number of Construction Engineering students pursue a second major in Mathematics. The following are typical examples of how the program will be designated on the transcripts.

Degree Awarded:	Bachelor of Science *Date awarded*
Major:	Construction Engineering
Major:	2nd Major in Mathematics
Inst. Honors:	Cum Laude

Degree Awarded:	Bachelor of Science *Date awarded*
Major:	Construction Engineering

CRITERION 1. STUDENTS

Attachment 1-1: Construction Engineering Curriculum Flowchart



Attachment 1-2: DegreeWorks Construction Engineering Degree Audit Example

University Studies Core Curriculum					
			Catalog Year: 2010-2011	Semester Hours Required:	43
			GPA: 3.180	Semester Hours Applied:	44
COMMUNICATIONS					
College Reading and Writing	ENG 101	College Reading & Wrtg	B	3	Spring 2008
	Satisfied by	ENGL1301 - Dallas County Comm Coll Dist			
Written Argument and Research	ENG 102	US-Written Argument/Research	B	3	Fall 2009
	Satisfied by	ENGL2700 - University Of North Texas			
Speech	SPC 111	US-Fund of Speech	B	3	Fall 2007
	Satisfied by	SPCH1311 - Dallas County Comm Coll Dist			
MATHEMATICS	MATH 141	US-College Algebra	C	4	Fall 2008
	Satisfied by	MATH1414 - Dallas County Comm Coll Dist			
NATURAL SCIENCE					
Natural Science Electives	BSC 106	US-Hum Bio: Man & Environ	A	4	Fall 2008
	Satisfied by	BIOL1408 - Dallas County Comm Coll Dist			
	PHYS 211	University Physics I	B	4	Sum I 2010
	Satisfied by	PHYS2425 - Dallas County Comm Coll Dist			
SOCIAL & BEHAVIORAL SCIENCE					
AMERICAN HISTORY					
U.S. History to 1877	HIST 121	US-US History to 1877	C	3	Fall 2007
	Satisfied by	HIST1301 - Dallas County Comm Coll Dist			
U.S. History from 1865	HIST 122	US-U.S. History From 1865	A	3	Fall 2008
	Satisfied by	HIST1302 - Dallas County Comm Coll Dist			
AMERICAN GOVERNMENT					
U.S. Princ of US & TX Gov & US/TX Gov	PSCI 211	Us Prin of Us and Tex Gov	B	3	Spring 2008
	Satisfied by	GOVT2301 - Dallas County Comm Coll Dist			
	PSCI 212	Us/Tex Gov: Inst and Pols	C	3	Spring 2009
	Satisfied by	GOVT2302 - Dallas County Comm Coll Dist			
SOCIAL & BEHAVIORAL SCIENCE ELECTIVE	SOC 111	Intro to Sociology	A	3	Spring 2008
	Satisfied by	SOCI1301 - Dallas County Comm Coll Dist			
HUMANITIES	ENG 203	US-Lit of Western World	A	3	Sum I 2009
	Satisfied by	ENGL2333 - Dallas County Comm Coll Dist			
VISUAL & PERFORMING ARTS	ART 202	Art, Tech & Civilization	A	3	Spring 2009
	Satisfied by	HUMA1315 - Dallas County Comm Coll Dist			
FITNESS & RECREATIONAL ACTIVITY	KINE 001	Beginning Physical Fitness	A	1	Spring 2009
	Satisfied by	PHED1164 - Dallas County Comm Coll Dist			
	KINE 003	Beginning Golf	A	1	Fall 2007
Major in Construction Engineering, BS					
			Catalog Year: 2010-2011	Semester Hours Required:	98
			GPA: 3.600	Semester Hours Applied:	94
Unmet conditions for this set of requirements:	Major semester hours required: You currently have 94, You still need a minimum of 4 more semester hours.				
REQUIRED COURSES IN THE MAJOR					
Statics	CONE 211	Statics	A	3	Fall 2010
Dynamics	CONE 212	Dynamics	A	3	Spring 2011
Consruction Materials and Methods	CONE 221	Constuction Mtrls & Mthd	A	3	Spring 2011
Construction Estimating	CONE 231	Construction Estimating	A	3	Fall 2011
Mechanics of Materials	CONE 331	Mechanics of Materials	A	3	Spring 2012
Engineering Hydrology & Hydraulics	CONE 341	Engr Hydrology & Hydrauli	A	3	Spring 2012
Field Engineering & Surveying	CONE 351	Field Engr & Surveying	A	3	Spring 2012
Steel & Concrete Design	CONE 411	Steel & Concrete Design	A	3	Fall 2012
Structural Analysis & Design	CONE 412	Struc Analysis & Design	A	3	Fall 2012
Construction Safety	CONE 421	Construction Safety	A	3	Fall 2012
Construction Engineering Management	CONE 422	Construction Engr Mgmt	A	3	Fall 2012
Contracts & Specifications	CONE 423	Contracts & Specifications	R	(3)	Spring 2013
Construction Planning, Scheduling & Control	CONE 425	Const Plan, Sched & Cntrl	R	(3)	Spring 2013
Sustainable Construction Methods & Processes	CONE 431	Sustainable Const Mthd	R	(3)	Spring 2013
Soil Engineering	CONE 432	Soil Engineering	R	(3)	Spring 2013
Construction Engineering Internship	CONE 471	Const Engr Internship	R	(3)	Spring 2013
Elementary Engineering Analysis	IE 201	Elementary Engineering Anlysis	A	3	Fall 2010
Engineering Economic Analysis	IE 207	Engineering Economic Analysis	B	3	Spring 2011
Engineering Probability and Statistics	IE 211	Engineering Prob & Statistics	C	3	Spring 2011
Computer Aided Design (CAD)	IT 111	Computer-Aided Design (CAD)	A	3	Fall 2010
Quality Management and Improvement	IT 340	Quality Management & Improveme	A	3	Fall 2010
REQUIRED SUPPORT COURSES					
General & Quantitative Chemistry I	CHEM 111	US-General/Quant Chem	C	4	Sum I 2009
	Satisfied by	CHEM1411 - Dallas County Comm Coll Dist			
Calculus I	MATH 191	Calculus I	A	4	Spring 2010
	Satisfied by	MATH1710 - University Of North Texas			
Calculus II	MATH 192	Calculus II	B	4	Sum II 2010
	Satisfied by	MATH2414 - Dallas County Comm Coll Dist			
Differential Equations	MATH 315	Differential Equations	A	3	Fall 2010
Linear Algebra	MATH 335	Linear Algebra	A	3	Spring 2012
Principles of Macro or Micro Economics	ECO 232	US-Prin Micro Economics	B	3	Fall 2009
	Satisfied by	ECON1100 - University Of North Texas			
University Physics I & II	PHYS 2426	University Physics II	B	4	Fall 2011
	Still Needed:	1 Class in PHYS 2425*			
Environmental Ethics & Law or Geospatial Mapping	ENVS 403	Environmental Ethics & Law	A	3	Fall 2011
Legal Environment of Business	BA 357	Legal Org & Business Trans	B	3	Spring 2010
	Satisfied by	BLAW3430 - University Of North Texas			

Attachment 1-3: Department of Engineering & Technology Graduation Checkout Form

Texas A&M University - Commerce

Graduation Checkout

Semester _____ Year _____

I plan to graduate:(Place an X in the left hand box)

- ☐ **Spring _____**
- ☐ **Summer _____**
- ☐ **Fall _____**

Name

CWID

DATE

Current Semester Courses	
1	
2	
3	
4	
5	
6	
7	

Courses to be Taken in Following Semester	
1	
2	
3	
4	
5	
6	
7	

Courses you plan to take Winter Mini	
1	
2	

Courses you plan to take May Mini	
1	
2	

Courses you plan to transfer from another institution			
		CLEP	**Trans**
1			
2			
3			

Courses you plan to CLEP or use correspondence			
		CLEP	**Trans**
1			
2			
3			

	Yes	**No**	**Pending Date**
English Usage Requirement (JLE, TSI, Etc.)			
Advanced Level Hours			
36 Total Advanced Hours			
24 Advanced Hours at A&M-Commerce			
Minimum 60 Hours @ Senior Institution			
Residence Requirement			
25% of Courses needed for degree@ A&M-Commerce			
24 of Final 30 hours at A&M-Commerce			
Degree Requirements			
Overall GPA 2.0 or Better			
C or better in all required classes			
GPA 2.0 or Better on all hours completed @ A&M-Commerce			

Notes:

I have met with my academic advisor and understand that I must complete any deficiencies prior to graduation. I have read the second page of this form and am aware of the conditions for graduation. If I do not meet the requirements I understand that I must re-file with the CBT.

Print Student's Name: Student's Signature: Date:

I have met with this student and verified what is needed for this student to graduate.

Print Advisor's Name Advisor's Signature: Date:

I concur with the student's and advisor's graduation plan.

Department Head's Signature: Department: Date:

I certify that if the student meets the above requirements they will be eligible for graduation

Dean's Signature College of Business & Technology Date:

Civil Engineering 2-year Transfer Plan

FRESHMAN YEAR

First Semester (Fall)

	Course	SCH
MATH 2413	Calculus I	4
CHEM 1311	General Chemistry	3
CHEM 1111	Chemistry I Laboratory	1
ENGR 1201	Introduction to Engineering	2
XXXX ####	Texas Core Curriculum Requirement	3
XXXX ####	Texas Core Curriculum Requirement	3
	Semester Credit Hours	**16**

Second Semester (Spring)

	Course	SCH
MATH 2414	Calculus II	4
PHYS 2325	University Physics I	3
PHYS 2125	University Physics I Laboratory	1
ENGR 1304	Engineering Graphics	3
XXXX ####	Texas Core Curriculum Requirement	3
XXXX ####	Texas Core Curriculum Requirement	3
	Semester Credit Hours	**17**

SOPHOMORE YEAR

First Semester (Fall)

	Course	SCH
MATH 2415	Multi-Variable Calculus (Calculus III)	4
ENGR 1307	Plane Surveying	3
ENGR 2301	Engineering Mechanics: Statics	3
ENGR 2304	Programming for Engineers	3
or	COSC 1436/1336 Programming Fundamentals	
XXXX ####	Texas Core Curriculum Requirement	3
	Semester Credit Hours	**16**

Second Semester (Spring)

	Course	SCH
MATH 2320	Differential Equations	3
PHYS 2326/2126	University Physics II/Physics II Lab	4
or	ENGR 2305/2105 Electrical Circuits I/Circuits I Lab	
ENGR 2302	Engineering Mechanics: Dynamics	3
XXXX ####	Texas Core Curriculum Requirement	3
XXXX ####	Texas Core Curriculum Requirement	3
	Semester Credit Hours	**16**

Notes:

1. Texas Common Course Numbers are used for all TCCN-numbered courses.
2. Some civil engineering programs require Chemistry II in addition to Chemistry I. The student is advised to check with the school to which he or she intends to transfer for specific requirements.
3. Either Physics II or Electrical Circuits I may be required. The student is advised to check with the school to which he or she intends to transfer for specific applicability of this course to the engineering major.
4. Some civil engineering programs will accept the course ENGR 1201 for transfer credit and as applicable to the engineering major, while others will accept the course for transfer credit only. The student is advised to check with the school to which he or she intends to transfer for specific applicability of this course to the engineering major.
5. Civil engineering programs will accept the course COSC 1436/1336 in place of ENGR 2304.

This diagram shows the recommended course of study for university transfer to bachelor's degree programs in Civil Engineering.
Tuning Texas, May 2011

CRITERION 2. PROGRAM EDUCATIONAL OBJECTIVES

A. Mission Statements

1. University Mission Statement

Texas A&M University-Commerce provides a personal educational experience for a diverse community of life-long learners. Our purpose is to discover and disseminate knowledge for leadership and service in an interconnected and dynamic world. Our challenge is to nurture partnerships for the intellectual, cultural, social, and economic vitality of Texas and beyond.

a. University Guiding Principles

Diversity: Foster a culture of inclusion which attracts to our university highly qualified students, faculty, and staff who represent the diversity of the region we serve, and who will engage with us in the pursuit of our university's vision and mission.

Service: Promote excellence in service to members of all internal and external communities.

Student Success: Pursue and implement effective, research-based strategies that provide all students the resources, support, and high-quality instruction they need to achieve their goal of earning a college degree.

Stewardship: Advance the university by demonstrating the quality of our programs and services to an ever-expanding community of supporters. Leverage the value of public, private, and human resources through business practices that are founded in accountability and transparency, and academic practices that are continuously improved through research, assessment, and innovation.

Globalization: Cultivate an academic environment enlivened by global interconnections that traverse the boundaries of culture, politics, and place.

Research: Strengthen the nexus between teaching and research in ways that speak to the university's imperative both to create and disseminate knowledge.

Communication: Develop a consistent, authentic, and reliable message that effectively conveys our commitment to extending opportunity, transforming lives, and shaping futures through education.

2. College of Science, Engineering, & Agriculture Mission Statement

Innovation and Discovery. That is our charge and our pledge. The faculty and staff of CoSEA accept the responsibility of building an innovative framework to join our students in building a better Texas eager to compete in an interconnected world with creativity, ethical leadership, and imagination. We don't just discover the future, we make it.

3. Department of Engineering & Technology Mission Statement

Practical Ingenuity. The framework of the Department of Engineering & Technology, built upon instruction, research, and infusion of real-world experiences, fosters the development of effective problem solvers.

B. Program Educational Objectives

Graduates of the Bachelor of Science in Construction Engineering program at Texas A&M University-Commerce will...

PEO #1 Engage in life-long growth within the construction profession as evidenced by, but not limited to, continuing education, participation in professional societies and conferences, industry certifications, or graduate education.

PEO #2 Serve as a catalyst for technology within the construction profession as evidenced by, but not limited to utilization of industry accepted project controls software, responsibility for developing recommendations for industry accepted systems, or serving as a liaison between company, vendors, and technology user groups.

PEO #3 Meet professional requirements necessary for engineering licensure.

The Construction Engineering PEOs are available to the general public in the following location:

Department of Engineering & Technology – Construction Engineering program web page
http://www.tamuc.edu/academics/colleges/scienceEngineeringAgriculture/departments/engineeringTechnology/programs/constructionEngineering/default.aspx

C. Consistency of the Program Educational Objectives with the Mission of the Institution

The **University values** of ceaseless industry, fearless investigation, unfettered thought, and unselfish service to others through Integrity, Innovation, and Imagination, capture the essence of engineering. Industry, investigation, innovation, and service are reflected in the description of an engineer found the United States Department of Labor's *Occupational Outlook Handbook.*

> *Engineers apply the principles of science and mathematics to develop economical solutions to technical problems. Their work is the link between scientific discoveries and the commercial applications that meet societal and consumer needs.*

As evidenced in the mission statement, the **University Mission** is to foster the development of leaders to impact Northeast Texas, Texas, and beyond culturally, socially, and economically through innovation, discovery, and service. The Construction Engineering PEOs are consistent and align with the mission of the institution.

PEO #1 Engage in life-long growth within the construction profession as evidenced by, but not limited to, continuing education, participation in professional societies and conferences, industry certifications, or graduate education.

*Texas A&M University-Commerce provides a personal educational experience for a diverse community of **life-long learners**. Our purpose is to **discover and disseminate knowledge** for leadership and service in an interconnected and dynamic world. Our challenge is to nurture partnerships for the intellectual, cultural, social, and economic vitality of Texas and beyond.*

PEO #2 Serve as a catalyst for technology within the construction profession as evidenced by, but not limited to utilization of industry accepted project controls software, responsibility for developing recommendations for industry accepted systems, or serving as a liaison between company, vendors, and technology user groups.

*Texas A&M University-Commerce provides a personal educational experience for a diverse community of life-long learners. Our purpose is to discover and **disseminate knowledge for leadership and service** in an interconnected and dynamic world. Our challenge is to **nurture partnerships** for the intellectual, cultural, social, and economic vitality of Texas and beyond.*

PEO #3 Meet professional requirements necessary for engineering licensure.

*Texas A&M University-Commerce provides a personal educational experience for a diverse community of **life-long learners**. Our purpose is to discover and disseminate knowledge for leadership and service in an interconnected and dynamic world. Our challenge is to nurture partnerships for the intellectual, cultural, social, and **economic vitality of Texas and beyond.***

Guiding principles were developed by the university as part of a **strategic plan** to enable the institution to achieve its overall mission. The Construction Engineering program is aligned with the following guiding principles.

Guiding Principle/Imperative 1 – Diversity

Strategy 1.1: Our student body, both undergraduate and graduate, will reflect the ethnic diversity of the region served by A&M-Commerce.

Table 2-1: Comparison of Construction Engineering and University Demographics

Ethnicity	***CONE Program[1]***	***University[2]***
White, Non-Hispanic	*49.2%*	*57.7%*
Black, Non-Hispanic	*19.7%*	*18.0%*
Hispanic American	*13.1%*	*10.6%*
International Student	*9.8%*	*8.6%*
Asian	*0%*	*2.3%*
American Indian / Alaskan Native	*3.3%*	*1.2%*
Unknown	*4.9%*	*1.6%*

[1]A&M-Commerce Office of Institutional Research

[2]Texas Higher Education Coordinating Board

Guiding Principle/Imperative 2 – Service

Strategy 1.4: Provide service to the community, region, state, and the nation as evidenced by an annual assessment of the number of employees engaged in activities and the potential impact on the economy and society.

The Construction Engineering faculty, staff, and student organizations are involved in a variety of service activities, which impact or have potential to impact the economy and society. Examples of service activities include, but are not limited to:

- *Lion's Pride BEST Robotics: Robotics competition hosted by the department. Program is free of charge to area school districts, allowing schools of any size or socioeconomic status to participate. [STEM participation]*
- *Engineering Summer Programs: Summer camps, focused on engineering, science, and mathematics. Participating schools are rural and economically disadvantaged, with an emphasis on first-generation college students. [STEM participation].*
- *Regional Involvement: North Central Texas InterLink Board of Directors, Northeast Texas Career and Technical Consortium Advisory Board, and Paris Texas Economic Development Corporation. [Regional Economy and Education]*
- *State-level Involvement: Engineering Technology Field-of-Study and* Workforce *Education Course Manual (WECM) Project Facilitator. [State Economy and Education]*

Guiding Principle/Imperative 3 – Student Success

Strategy 1.3: The number of undergraduate degrees awarded from critical shortage fields which have been identified by the Texas Higher Education Coordinating Board will improve five percentage points between 2011 and 2015.

In response to this developing crisis and other critical issues facing Texas and the United States, the Texas Higher Education Coordinating Board (THECB) adopted and implemented the Closing the Gaps: the Texas Higher Education Plan in October 2000. The plan established goals in the areas of participation, success, excellence, and research. One key strategy under the goal of success is to significantly increase the number of STEM degrees, including engineering, awarded by higher education institutions in Texas.

Guiding Principle/Imperative 7 – Communication

Strategy 1.3: Develop and implement marketing strategies that can be tracked to an increase in student enrollment and donations received.

In recognition of the emerging field of Building Information Modeling (BIM) within the construction industry, a strategy was developed and implemented to make A&M-Commerce a leader in this area within the region. This is evidenced by PEO #2. Example initiatives included integration of BIM throughout the curriculum and hosting an annual BIM Educational/Industry symposium. Efforts have resulted in the donation of BIM software and educational grants valued at more than $500,000.

The University's strategic plan is shown in Attachment 2-1 at the end of this chapter and is available online at http://web.tamu-commerce.edu/aboutUs/ourMission/default.aspx.

D. Program Constituencies

The primary constituencies of the Construction Engineering program include 1) current students*, 2) alumni, 3) Construction Engineering professionals, and 4) employers. The Construction Engineering professionals are represented by the faculty, industry advisory board (IAB) members, professional engineering society members, and ABET. In addition to the companies that employ CONE graduates, the employers are also represented by the industry advisory board members and internship / cooperative learning sponsors. Examples of area employers include, but are not limited to:

- L-3 Communications (Greenville, Texas)
- Harrison, Walker, & Harper, LP (WeBuild)
- Dee Brown, Inc.
- Rogers-O'Brien Construction
- Manhattan Construction
- Hunt Construction Group, Inc.
- TDIndustries
- Texas Department of Transportation
- Hensel Phelps Construction Co.
- Balfour Betty
- MEDCO Construction
- TEXO, The Construction Association

**Program educational objectives are broad statements that describe what graduates are expected to attain within a few years of graduation. By definition, PEOs do not directly meet the needs of students currently in the CONE program. However, if the PEOs address the needs of the alumni, CONE professionals, and employers, then indirectly they meet the needs of current students.*

The Construction Engineering PEOs were developed with the intent to provide a set of skills and/or knowledge, that when achieved, will enable an individual to be successful in the chosen field of Construction Engineering. Graduates benefit from having an employable skill set, employers benefit from having a talent pool to draw from with a required skill set, and the CONE professions benefit from the continuation and viability of their profession and career field.

Consistency and alignment with requirements established by professional societies or organizations provide evidence the PEOs meet the primary needs of the program constituencies.

National Academy of Engineering

In the recent publication, *The Engineer of 2020: Visions of Engineering in the New Century,* the National Academy of Engineering identified key attributes necessary to "support the success and relevance of the engineering profession" into the next century. These attributes include strong analytical skills, practical ingenuity, creativity, good communication, leadership, high ethical standards, agility and flexibility, and lifelong learners. The

Construction Engineering PEOs align closely with the Academy's research on key attributes of engineers.

PEO #1 Engage in life-long growth within the construction profession as evidenced by, but not limited to, continuing education, participation in professional societies and conferences, industry certifications, or graduate education.

- *Leadership*
- *Professionalism*
- *Lifelong Learners*

PEO #2 Serve as a catalyst for technology within the construction profession as evidenced by, but not limited to utilization of industry accepted project controls software, responsibility for developing recommendations for industry accepted systems, or serving as a liaison between company, vendors, and technology user groups.

- *Creativity*
- *Communication*
- *Principles of Business & Management*
- *Leadership*
- *Ethical Standards*
- *Flexibility*

PEO #3 Meet professional requirements necessary for engineering licensure.

- *Strong analytical skills*
- *Practical ingenuity*
- *Creativity*
- *Professionalism*
- *Lifelong Learners*

American Society of Civil Engineers (ASCE)

The goals of the American Society of Civil Engineers include:

- *Facilitate the advancement of technology*
- *Encourage and provide tools for lifelong learning*
- *Promote professionalism*
- *Develop and support civil engineer leaders*
- *Advocate infrastructure and environmental stewardship*

The PEOs align and reflect similar goals as those outlined by the American Society of Civil Engineers. Achievement of the PEOs will position graduates to be successful in the field of Construction Engineering.

ABET

Program criteria that apply to Construction Engineering programs include:

> *The program must prepare graduates to apply knowledge of mathematics through differential and integral calculus, probability and statistics, general chemistry, and calculus-based physics; to analyze and design construction processes and systems in a construction engineering specialty field, applying knowledge of methods, materials, equipment, planning, scheduling, safety, and cost analysis; to explain basic legal and ethical concepts and the importance of professional engineering licensure in the construction industry; to explain basic concepts of management topics such as economics, business, accounting, communications, leadership, decision and optimization methods, engineering economics, engineering management, and cost control.*

The PEOs align and reflect the skills and knowledge outlined in the ABET *Criteria for Accrediting Engineering Programs*. Achievement of the PEOs will position graduates to be successful in the field of Construction Engineering.

E. Process for Revision of the Program Educational Objectives

The Construction Engineering PEOs were developed by the Construction Engineering faculty utilizing research and input from the program constituencies. The PEOs are based on the needs of the stakeholders with the intent to provide a set of skills and/or knowledge that when achieved will enable an individual to be success in the chosen field of Construction Engineering. Program faculty have the responsibility to revise, as necessary, the PEOs. Figure 2-1 shows the graphical representation of the PEO review process.

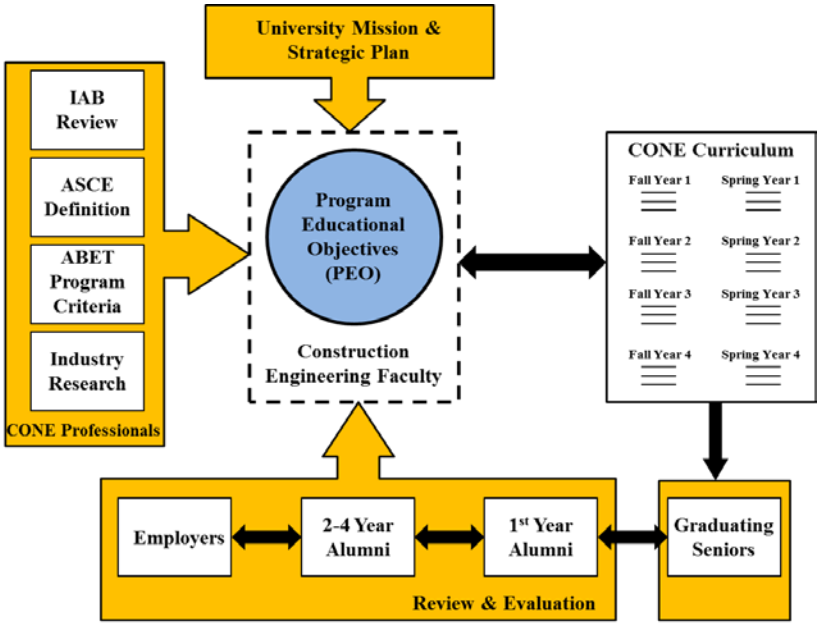


Figure 2-1: PEO Evaluation and Revision Process

As defined in the ABET *2013-2014 Criteria for Accrediting Engineering Programs*, PEOs are statements that describe what graduates should attain within a few years of graduation and are based on the needs of the program constituencies. There is a variety of entry points into the review process but all the key constituents needs and voices are considered. The complete review process is scheduled on a three year cycle. However, there is annual input into the process and revisions can occur more frequently if deemed necessary.

University Mission & Strategic Plan: Any strategic changes made at the university level results in an evaluation of the PEOs to ensure they remain consistent to the university mission. In addition, the university's guiding principles are considered in the department strategic planning.

The current mission statement has similar elements but provides more specificity.

> *Texas A&M University-Commerce provides a personal educational experience for a diverse community of life-long learners. Our purpose is to discover and disseminate knowledge for leadership and service in an interconnected and dynamic world. Our challenge is to nurture partnerships for the intellectual, cultural, social, and economic vitality of Texas and beyond*

The PEOs are consistent with the university mission statement. Section C of this chapter provides evidence of the consistency between the PEOs and mission statement.

CONE Professionals: The ABET program criteria for Construction Engineering are reviewed on an annual basis. Any significant revisions result in the PEOs being re-evaluated to ensure they remain properly aligned. In addition, research from industry or professional societies is considered when the PEOs are evaluated. Examples include the National Academy of Engineering's *The Engineer of 2020: Visions of Engineering in the New Century* and the goals for the American Society of Civil Engineers (ASCE), which is the lead society for construction engineering programs. Section D of this chapter provides evidence of the consistency between the PEOs and the cited sources.

The Industry Advisory Board (IAB) is comprised of industry representatives and employers from the field of Construction Engineering. The IAB reviews key elements and provides guidance for the program. The IAB is asked to review the PEOs on a periodic basis. The board reviewed, revised, and approved the PEOs in Spring 2011. There was a consensus from the members that the PEOs were relevant and appropriate. The IAB review will be tied to the same cycle as the employer survey in the future.

Systematic Review and Evaluation: Four different survey instruments are utilized to systematically review and evaluate the PEOs: 1) Graduating Senior Exit Survey, 2) 1st-Year Alumni Survey, 3) 2-4 Year Alumni Survey, and 4) Employer Survey. Both quantitative and qualitative data will be utilized to evaluate the relevance and consistency of the PEOs to the various program constituents' needs.

Graduating Senior Exit Survey

By definition, students are expected to attain the Student Outcomes by the time of graduation, not the PEOs. The Exit Survey asks graduating seniors to rate the perceived relevance of the PEOs and their expectations on how to achieve them. The process will also serve as a means to highlight the PEOs and industry expectations as they prepare to enter the work force. Given this fact, revisions to the PEOs will not be made based solely upon the results of the Exit Survey. The survey will be administered annually in the Spring semester prior to graduation.

1st-year Alumni Survey

The influence of an undergraduate education on the attainment of the PEOs is assumed to be at the highest level during the first year of work. After an individual has been employed or out of the program for longer period of times, the impact of industry training and other life experiences begin to take on a more significant role and it becomes difficult to attribute success in PEO attainment directly to the undergraduate program. This is the first of two alumni surveys. The survey is administered annually in the Spring, one year following graduation.

The results from the 1st-year Alumni Survey and Graduating Senior Exit Survey are compared, which indicates the differences in perception versus actual experience of PEOs for the same study group. The following identifies potential outcomes from the evaluations:

Exit Survey	1st-year Alumni Survey	Action / Outcome
PEOs are not perceived to be relevant	PEOs are not relevant	If a trend persists, PEOs will be reviewed and modified as needed based upon input from the key program constituents.
PEOs are perceived to be relevant	PEOs are not relevant	If the trend persists, PEOs will be reviewed and modified as needed based upon input from the key program constituents.
PEOs are not perceived to be relevant	PEOs are relevant	No action or revisions required. If the trend persists, measures will be taken to address the perception of graduating seniors as to what graduates are expected to attain and demonstrate within a few years of graduation.
PEOs are perceived to be relevant	PEOs are relevant	No action or revisions required.

2-4 year Alumni Survey

This is the second of two alumni surveys. The survey is administered on a three year cycle in the Spring. The study population includes alumni who graduated 2-4 years prior to the time the survey is conducted. The results from the 2-4 year Alumni Survey and 1st-

year Alumni Survey will be compared. This will provide insight into the relevancy of the PEOs from alumni with more industry experience. The following identifies potential outcomes from the analyses:

1st-year Alumni Survey	2-4 year Alumni Survey	Action / Outcome
PEOs are not relevant	PEOs are not relevant	If a trend persists, PEOs will be reviewed and modified as needed based upon input from the key program constituents.
PEOs are relevant	PEOs are not relevant	If the trend persists, PEOs will be reviewed and modified as needed based upon input from the key program constituents.
PEOs are not relevant	PEOs are relevant	No additional corrective action required. If necessary, a non-relevancy trend from 1st year alumni will result in corrective action in the Exit Survey / 1st-year Alumni Survey assessment stage.
PEOs are relevant	PEOs are relevant	No action or revisions required.

Employer Survey

The employer survey will seek input on the relevancy of the PEOs from hiring firms. The survey is administered on a three year cycle in the Spring. The results from the Employer Survey and 2-4 year Alumni Survey are compared. The following identifies potential outcomes from the analyses:

2-4 year Alumni Survey	Employer Survey	Action / Outcome
PEOs are not relevant	PEOs are not relevant	If a trend persists, PEOs will be reviewed and modified as needed based upon input from the key program constituents.
PEOs are relevant	PEOs are not relevant	If the trend persists, PEOs will be reviewed and modified as needed based upon input from the key program constituents.
PEOs are not relevant	PEOs are relevant	No additional corrective action required. If necessary, a non-relevancy trend from 2-4 year alumni will result in corrective action in the 1st-year / 2-4 year Alumni Survey assessment stage.
PEOs are relevant	PEOs are relevant	No action or revisions required.

The full PEO review and evaluation process is represented graphically in Figure 2-2.

1. PEO Review and Evaluation Process Timeline

Elements of PEO review are conducted annually but the complete evaluation process is on a three year cycle. The timeline for the PEO Assessment process is provided in Table 2-1.

Table 2-1: PEO Review and Evaluation Cycle

	Spr '13	Spr '14	Spr '15	Spr '16	Spr '17	Spr '18	Spr '19	Spr '20	Spr '21
Graduating Senior Exit Survey	√	√	√	√	√	√	√	√	√
1st-Year Alumni Survey		√	√	√	√	√	√	√	√
2-4 Year Alumni Survey				√			√		
Employer Survey			√			√			√

A formal review of the PEOs is tied to the Employer Survey cycle, unless circumstances dictates it be done on a higher frequency.

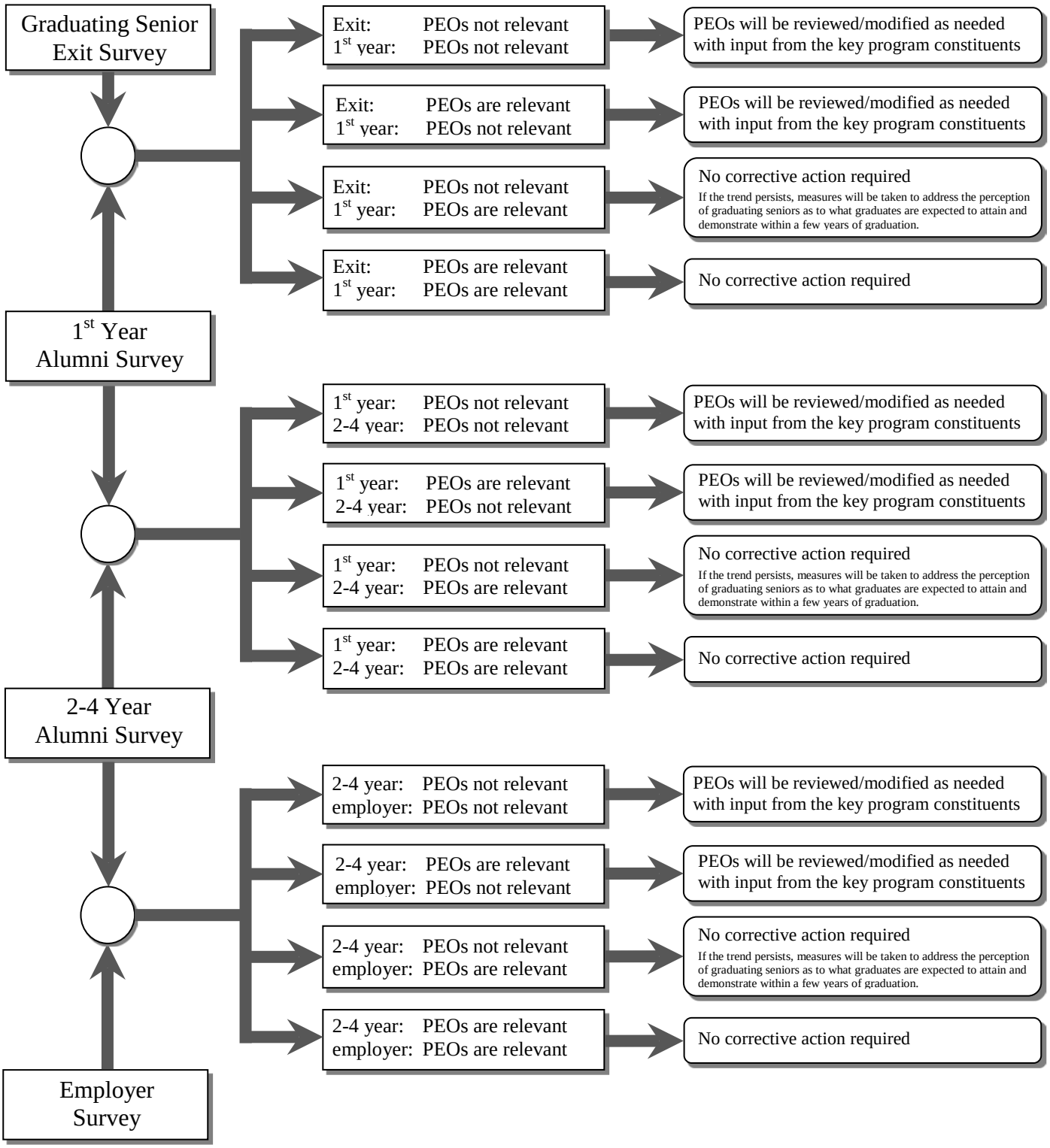


Figure 2-2: Program Educational Objectives Review and Evaluation Process

Texas A&M University-Commerce

Strategic Plan, 2011-2015

University Values

Ceaseless industry, fearless investigation, unfettered thought, and unselfish service to others through Integrity, Innovation, and Imagination.

University Vision

Texas A&M University-Commerce, as a part of the A&M family of universities, will become the university of choice for all those seeking a higher education in the Northeast Texas region and beyond. It will provide traditional and non-traditional learning opportunities through existing and new programs that set high expectations and goals for students, faculty, and staff. The university will provide a sense of community through a nurturing environment for all individuals in order to maximize learning, career and personal development. A&M-Commerce will become a place where students, faculty, staff, and community are engaged in the pursuit of excellence.

University Mission

Texas A&M University-Commerce provides a personal educational experience for a diverse community of life-long learners. Our purpose is to discover and disseminate knowledge for leadership and service in an interconnected and dynamic world. Our challenge is to nurture partnerships for the intellectual, cultural, social, and economic vitality of Texas and beyond.

SUMMARY OF IMPERATIVES – OUR *GUIDING PRINCIPLES*

I. DIVERSITY
II. SERVICE
III. STUDENT SUCCESS
IV. STEWARDSHIP
V. GLOBALIZATION
VI. RESEARCH
VII. COMMUNICATION

IMPERATIVE I – DIVERSITY

Goal 1. We will foster a culture of inclusion which attracts to our university highly qualified students, faculty, and staff who represent the diversity of the region we serve, and who will engage with us in the pursuit of our university's vision and mission.

Strategy 1.1: Our student body, both undergraduate and graduate, will reflect the ethnic diversity of the region served by A&M-Commerce.

Strategy 1.2: A&M-Commerce will be designated a Hispanic-Serving Institution by 2015.

Strategy 1.3: The University will enhance the diversity of our faculty and staff members by implementing more aggressive recruitment efforts to increase the number of ethnic/minority faculty and staff.

Strategy 1.4: A&M-Commerce will integrate training in civility, diversity, and democratic processes in orientation for students, faculty, and staff resulting in an increase in employees who are able to communicate with a significantly diverse student body.

IMPERATIVE II – SERVICE

Goal 1. We will promote excellence in service to members of all internal and external communities.

Strategy 1.1: Improve customer service to internal and external stakeholders as evidenced by customer service satisfaction surveys that will be conducted by each unit annually and the results used for continuous improvement.

Strategy 1.2: Make information easy to access and provide the right answer or advice the first time by improving web, telephone, and personal contact with all stakeholders.

Strategy 1.3: Limit response time to inquiries and requests for assistance to within 24 hours of the request.

Strategy 1.4: Provide service to the community, region, state, and the nation as evidenced by an annual assessment of the number of employees engaged in activities and the potential impact on the economy and society.

IMPERATIVE III – STUDENT SUCCESS

Goal 1. We will pursue and implement effective, research-based strategies that provide all students the resources, support, and high-quality instruction they need to achieve their goals of earning a college degree.

Strategy 1.1: Freshman fall-to-fall retention measures will improve five percentage points from 2011 to 2015.

Strategy 1.2: Graduation rates of first-time, full-time freshman students will improve five percentage points from 2011 to 2015.

Strategy 1.3: The number of undergraduate degrees awarded from critical shortage fields which have been identified by the Texas Higher Education Coordinating Board will improve five percentage points between 2011 and 2015.

Strategy 1.4: Effective and innovative teaching strategies and a focus on student-learning outcomes will result in an increase in placement rates, a reduction in time to degree, and an improvement in graduation rates.

IMPERATIVE IV – STEWARDSHIP

Goal 1. We will advance the university by demonstrating the quality of our programs and services to an ever-expanding community of supporters. We will leverage the value of public, private, and human resources through business practices that are founded in accountability and transparency and academic practices that are continuously improved through research, assessment, and innovation.

Strategy 1.1: Create a campus culture that advances shared governance and sustains and supports operational and service excellence as evidenced by annual stakeholder surveys.

Strategy 1.2: Identify a minimum of one percent of the annual budget for reallocation to fund innovation and new initiatives.

Strategy 1.3: Maintain status as among the most affordable institutions of higher education in Texas by exercising proper fiscal stewardship and control in managing funds in direct support of its mission.

Strategy 1.4: Increase non-grant funding from external sources by 10 percent per year.

IMPERATIVE V – GLOBALIZATION

Goal 1. We will cultivate an academic environment enlivened by global interconnections that traverse the boundaries of culture, politics, and place.

Strategy 1.1: Learning outcomes described in the Quality Enhancement Plan will guide the university's continuous improvement efforts.

Strategy 1.2: Two percent of the student body will have experienced a study abroad activity by 2015.

Strategy 1.3: A minimum of one strategic partnership with an internationally recognized global entity will be established each year that results in an innovative and revenue-producing program of study.

Strategy 1.4: A minimum of two productive teaching/research collaborations will be established each year.

IMPERATIVE VI – RESEARCH

Goal 1. We will strengthen the nexus between teaching and research in ways that speak to the university's imperative to both create and disseminate knowledge.

Strategy 1.1: A&M-Commerce will expand knowledge in fields critical to our state, nation, and interconnected world as evidenced by an annual increase in the number of scholarly publications and grants.

Strategy 1.2: The number of grant requests for external funding will increase 10 percentage points between 2011 and 2015.

Strategy 1.3: A&M-Commerce will increase the amount of externally funded research by 10 percentage points between 2011 and 2015.

Strategy 1.4: A&M-Commerce will increase the number of post-doctoral researchers by 6 between 2011 and 2015.

IMPERATIVE VII – COMMUNICATION

Goal 1. We will develop a consistent, authentic, and reliable message that effectively conveys our commitment to extending opportunity, transforming lives, and shaping futures through education.

Strategy 1.1: Build brand recognition in the Dallas/Fort Worth Metroplex that results in an increase in student enrollment from that region and aligns with specific strategic enrollment goals regarding targeted programs and student populations.

Strategy 1.2: Develop and implement marketing strategies that can be tracked to an increase in student enrollment and donations received.

CRITERION 3. STUDENT OUTCOMES

A. Student Outcomes

Student outcomes describe what students are expected to know and be able to do by the time of graduation. These relate to the skills, knowledge, and behaviors that students acquire as they progress through the program.

The student outcomes for the Construction Engineering program are:

a) an ability to apply knowledge of mathematics, science, and engineering
b) an ability to design and conduct experiments, as well as to analyze and interpret data
c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
d) an ability to function on multidisciplinary teams
e) an ability to identify, formulate, and solve engineering problems
f) an understanding of professional and ethical responsibility
g) an ability to communicate effectively
h) the broad education necessary to understand the impact of engineering solutions in a global,
i) economic, environmental, and societal context a recognition of the need for, and an ability to engage in life-long learning
j) a knowledge of contemporary issues
k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

The student outcomes are documented and available to the general public in the university catalog as well as on the Construction Engineering program page. The catalog can be accessed online at http://catalog.tamuc.edu/. The construction engineering page is located under "Programs" on the Department of Engineering & Technology home page (www.tamuc.edu/iet).

The attainment of student outcomes occurs as a student progresses through the program. This does not transpire as a result of one course rather, it is an ongoing process with the student outcomes being integrated throughout the curriculum. The level of emphasis varies from course-to-course. There is a series of courses in which the skills and knowledge associated with a given outcome are introduced and successively reinforced. This process culminates at a point where students are able to demonstrate achievement of a given student outcome. The primary course where a student outcome is introduced, reinforced, and assessed is shown in Table 3-1. This does not imply that student outcomes are not a part of other courses or department events. Rather, it illustrates where the faculty have chosen to place emphasis for each outcome. Table 3-2 indicates the course where a student outcome is assessed as well as the responsible faculty member. If a different faculty member teaches the designated course, they will assume responsibility for the student outcome assessment.

Table 3-1: Construction Engineering Student Outcome / Course Crosswalk

Student Outcomes / Course	Criterion 3.(a)	Criterion 3.(b)	Criterion 3.(c)	Criterion 3.(d)	Criterion 3.(e)	Criterion 3.(f)	Criterion 3.(g)	Criterion 3.(h)	Criterion 3.(i)	Criterion 3.(j)	Criterion 3.(k)
CONE 211											
CONE 212											
CONE 221		**I**		**I**			**I**		**I**		
CONE 231			**I**			**I**					**I**
CONE 331	**I**	**R**			**I**						
CONE 341											
CONE 351											
CONE 411					**R**						
CONE 412	**R**										**R**
CONE 421											
CONE 422			**R**	**R**		**R**	**R**	**R**	**R**	**R**	
CONE 423						**A**					
CONE 425											**A**
CONE 431			**A**					**A**		**A**	
CONE 432	**A**	**A**			**A**						
CONE 471				**A**			**A**		**A**		
IE 201											
IE 207											
IE 211								**I**			
IT 111										**I**	
IT 340											

Legend: I = Introduced, R = Reinforced, A = Assessed

Table 3-2: Construction Engineering Student Outcome Assessment Responsibilities

Course		Student Outcome	Faculty
CONE 423	Contracts & Specifications	(f)	Tsung
CONE 425	Construction Planning, Schedule, and Control	(k)	Wilson
CONE 431	Sustainable Construction Methods & Processes	(c), (h), (j)	Tsung
CONE 432	Soil Engineering	(a), (b), (e)	Oh
CONE 471	Construction Engineering Internship	(d), (g), (i)	Wilson

B. Relationship of Student Outcomes to Program Educational Objectives

The key attributes of engineers identified by the National Academy of Engineering included strong analytical skills, practical ingenuity, creativity, good communication, leadership, high ethical standards, agility and flexibility, and lifelong learners. These attributes align with the program student outcomes (a) – (k) as indicated below:

Strong analytical skills	(a), (b), (e), (k)
Practical ingenuity	(a), (b), (c), (e), (h), (k)
Creativity	(c), (e), (h), (k)
Good communication	(g)
Leadership	(c), (d), (e), (j)
High ethical standards	(f)
Agility and flexibility	(c), (d), (e), (h), (j)
Lifelong learners	(i)

The alignment of PEOs to the Academy's key attributes was documented in Criterion 2, Section D of this report. This provides a level of evidence that the skills and knowledge attained through the student outcomes will adequately prepare an individual to achieve the program educational outcomes. Table 3-3 shows the relationship between the PEOs and student outcomes.

Table 3-3: Alignment of CONE PEOs and Student Outcomes (a)-(k)

CONE Program Educational Objectives	Student Outcomes										
	Criterion 3. (a)	Criterion 3. (b)	Criterion 3. (c)	Criterion 3. (d)	Criterion 3. (e)	Criterion 3. (f)	Criterion 3. (g)	Criterion 3. (h)	Criterion 3. (i)	Criterion 3. (j)	Criterion 3. (k)
Engage in life-long growth within the construction profession as evidenced by, but not limited to, continuing education, participation in professional societies and conferences, industry certifications, or graduate education								✓	✓	✓	✓
Serve as a catalyst for technology within the construction profession as evidenced by, but not limited to utilization of industry accepted project controls software, responsibility for developing recommendations for industry accepted systems, or serving as a liaison between company, vendors, and technology user groups			✓	✓		✓	✓			✓	✓
Meet professional requirements necessary for engineering licensure	✓	✓	✓		✓	✓		✓	✓		✓

CRITERION 4. CONTINUOUS IMPROVEMENT

A. Student Outcomes

1. Student Outcome Assessment Process

Student outcomes describe what students are expected to know and be able to do by the time of graduation. These relate to the skills, knowledge, and behaviors that students acquire as they progress through the program. Faculty establish specific outcomes for each course. There is a series of courses in which the skills and knowledge associated with a given outcome are introduced and successively reinforced. This process culminates at a point where students are able to demonstrate achievement of a given student outcome. Table 3-1 identifies the course(s) where the student outcomes will be assessed along with the responsible faculty member.

2. Student Outcome Assessment Process Timeline

The student outcomes are assessed annually. Construction Engineering courses are offered once a year. The student outcomes assessments occur during the semester the designated course is offered. With the exception of CONE 231, CONE 331, and CONE 341, the courses designated in Table 3-1 were offered for the first time in Fall 2012 and Spring 2013.

3. Student Outcome Expected Level of Attainment

An expected level of attainment target will be set for each student outcome assessment. Target values are typically 70% or higher of the students will successfully demonstrate the assessment target.

4. Summaries of the Results of the Evaluation Process

The first Construction Engineering cohort will graduate in May 2013. Assessments will not be completed until the end of the Spring 2013 semester so there are no results to report at the time this report was generated.

5. Student Outcome Assessment/Evaluation Documentation

ABET notebooks will generated for each departmental course. The notebooks will include, 1) syllabus, 2) textbook information, 3) laboratory assignment / materials, 4) course notes and reference materials, 5) quizzes and examinations, 6) assessment data, and 9) sample student work. The documentation will be available in a hardcopy and electronic format. The ABET notebooks will be available for review during the site visit.

B. Continuous Improvement

The Construction Engineering faculty will review all assessment data following the Spring 2013 semester. Decisions regarding program/course enhancements or revisions will be made based upon the evaluation. To date not revisions have been recommended due to the fact the student outcomes assessments have not been completed.

C. Additional Information

Copies of the assessment instruments and evaluation data will be available for review at the time of the Fall 2013 visit. Other information such as minutes from meetings where the assessment results were evaluated and where recommendations for action were made will also be included.

CRITERION 5. CURRICULUM

A. Program Curriculum

1. Plan of Study

Table 5-1 describes the plan of study for students in the B.S. Construction Engineering program. The courses are listed in a recommended schedule by year and term (4 year, 8 semesters). A&M-Commerce is on the semester system. The average section enrollment is shown for all courses in the program for a 2-year period, with the exception of the Physical Education (2), Humanities, and Visual/Performing Arts electives. Students select from a group of courses each elective and the enrollments vary between courses.

Humanities (3 sh from the following):

ENG 2326, 200, 202, 2331; HIST 264 or 265; JOUR 1307; PHIL 1301, 331, 332, 360, 362; PSCI 410, 411, 412; RTV 1335, SPC 201

Visual and Performing Arts (3 sh from the following):

ART 1301, 1303, 1304, 227, 240, 250, 304, 307; ENG 432, 434; MUS 1310, 1308; PHO 111; THE 1310, 340, 440

Fitness and Recreational Activity (2 fitness and recreational activity courses)

Two Fitness and Recreational Activity (FRA) courses are required. Varsity Sports and marching band may be utilized to fulfill all or part of this requirement.

Under the Engineering Topics column, the symbol (✓) is used to indicate a significant design element is integrated into the course. The ABET definition from the *2013-2014 Criteria for Accrediting Engineering Programs,* Criterion 5(b) was as the standard for assessing whether a course included a significant design element.

> *Engineering design is the process of devising a system, component, or process to meet desired needs. It is a decision-making process (often iterative), in which the basic sciences, mathematics, and the engineering sciences are applied to convert resources optimally to meet these stated needs.*

2. Curriculum / PEO Alignment

A curriculum design process is initiated with a needs assessment to determine if there is sufficient demand for the program and its graduates. Given the demand, input from key constituents results in a set of general characteristics and/or attributes employers expect graduates to attain and demonstrate (PEOs). The skills, knowledge, or behaviors a student should possess at the time of graduation (Student Outcomes) are established by ABET. These outcomes provide a foundation deemed necessary in order for an individual to attain the PEOs. The PEOs are mapped to the student outcomes, which is shown in Table 3-2. The Student Outcomes are mapped to the curriculum, indicating where a student outcome is introduced, reinforced, and finally assessed. The course /

assessment crosswalk is provided in Table 3-1. A curriculum pattern is created by mapping the outcomes to specific courses and developing course competencies. Figure 5-1 shows a general graphical representation of the relationship between the Program Educational Outcomes and the program curriculum. Figure 5-2 shows a more detailed example for PEO #1.

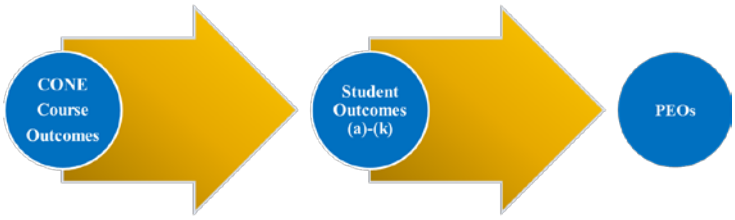


Figure 5-1: IE Curriculum Alignment with Program Educational Objectives

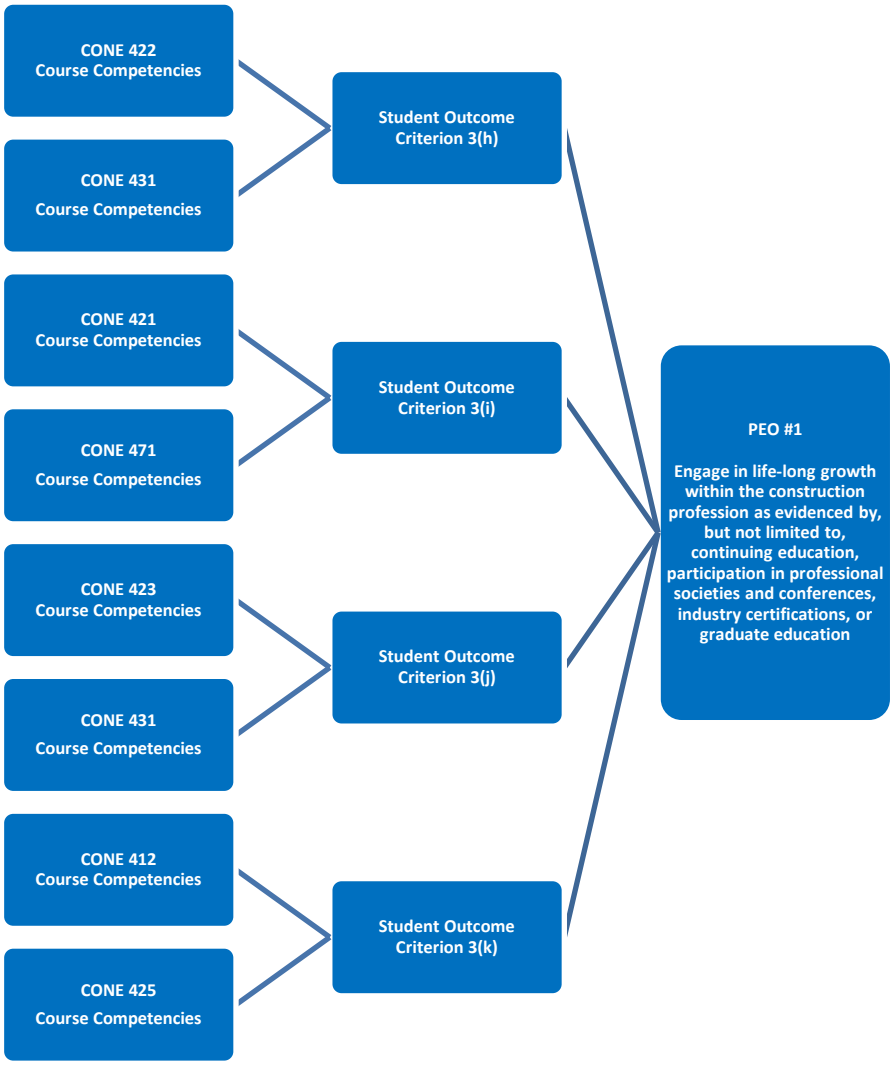


Figure 5-2: PEO / Curriculum Alignment Model

3. **Curriculum / Student Outcome Alignment**

The curriculum and prerequisite structure exist to provide the best opportunity for students to be successful in completing courses and ultimately the degree. Prerequisites are established to ensure the student has attained the necessary skills and/or knowledge to be successful in a sequenced course. The program sequence and prerequisites are established by the faculty and is shown in the curriculum flow chart in Figure 5-3.

In relationship to the Student Outcomes, the prerequisite structure supports the attainment of the outcomes by ensuring students take sequenced courses where the skills and knowledge associated with each outcome are introduced, reinforced, and then assessed.

4. **Program Prerequisite Structure**

The prerequisite structure for the Construction Engineering program is shown in Attachment 1-1, under the Criterion 1: Students chapter. The same flowchart is shown in Figure 5-3.

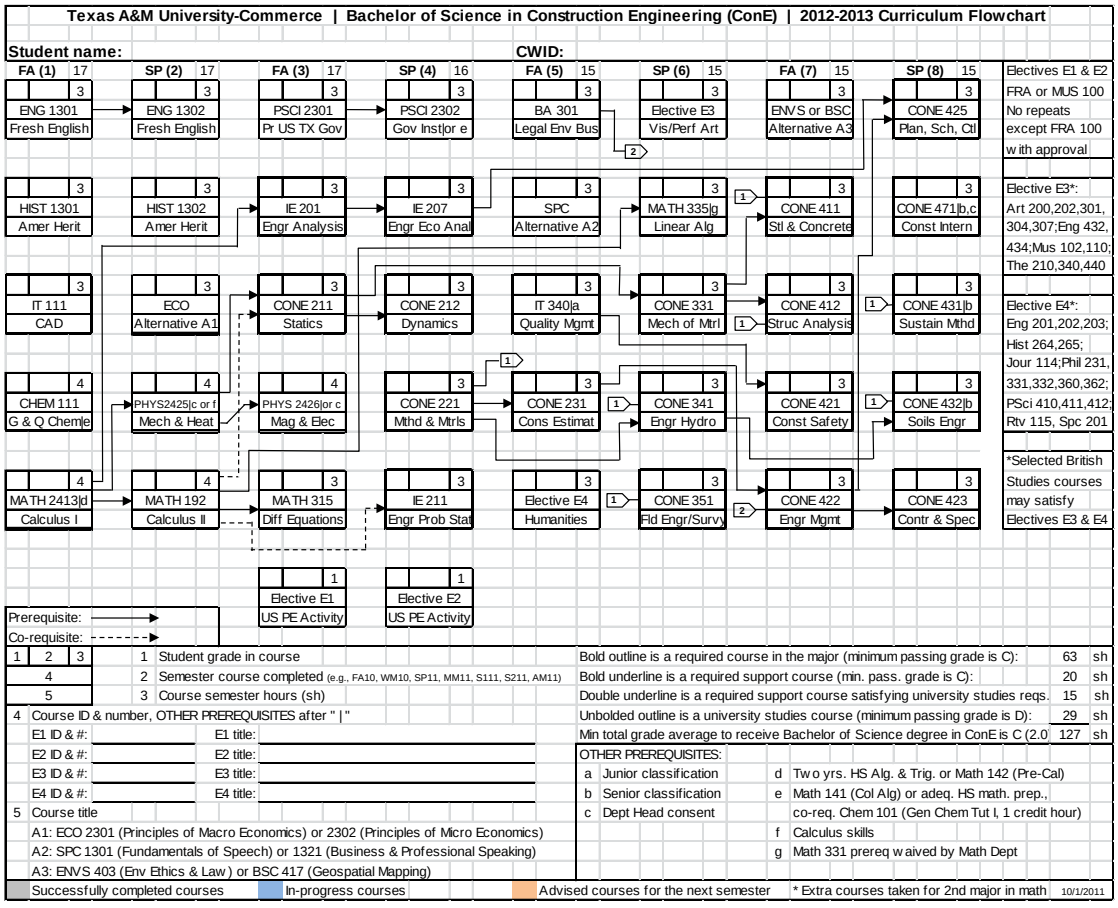


Figure 5-3: Bachelor of Science in Construction Engineering Curriculum Flowchart

5. **Program Hours and Depth of Study**

Criterion 5, Curriculum, in the ABET *2013-2014 Criteria for Accrediting Engineering Programs* manual documents the general requirements for any engineering curriculum. The Construction Engineering program at A&M-Commerce meets these requirements as evidenced by the following:

Note: *One year is the lesser of 32 semester hours (or equivalent) or one-fourth of the total credits required for graduation.* Construction Engineering is a 128 hour degree so one year equates to 32 semester hours.

(a) one year of a combination of college level mathematics and basic sciences (some with experimental experience) appropriate to the discipline. Basic sciences are defined as biological, chemical, and physical sciences.

The Construction Engineering program includes 32 hours (1 year) of mathematics and basic sciences as shown in Table 5-1. The Chemistry course and both university Physics courses have laboratories, which provide experimental experience.

(b) one and one-half years of engineering topics, consisting of engineering sciences and engineering design appropriate to the student's field of study. The engineering sciences have their roots in mathematics and basic sciences but carry knowledge further toward creative application. These studies provide a bridge between mathematics and basic sciences on the one hand and engineering practice on the other. Engineering design is the process of devising a system, component, or process to meet desired needs. It is a decision-making process (often iterative), in which the basic sciences, mathematics, and the engineering sciences are applied to convert resources optimally to meet these stated needs.

The Construction Engineering program includes 60 hours (~2 years) of engineering courses as shown in Table 5-1. The symbol (✓) is used to indicate a course with a significant design element, as defined above.

(c) a general education component that complements the technical content of the curriculum and is consistent with the program and institution objectives.

Every public college and university in Texas is required by law to have a **core curriculum** of at least 42 credit hours. The intent of the core is to provide a set of courses common to any baccalaureate degree. The required components of the core include communications, mathematics, natural sciences, humanities, visual/performing arts, US history, political science, and social/behavioral science. The core curriculum at A&M-Commerce is referred to a University Studies. The University Studies requirements are listed in the university undergraduate catalog at: http://catalog.tamuc.edu/

The Construction Engineering program satisfies the university studies requirement as shown in Table 5-1. The University Studies was designed to offer students flexibility in selecting courses that align with their individual educational goals. Specific courses are required from each category to ensure students take courses appropriate for and consistent with the technical content of the CONE program. The University Studies for the CONE program includes:

Communications (9 hours)

ENG 1301, 1302, SPC 1315 or 1321

Mathematics (3 hours)

MATH 2413* (Calculus I)

Natural Sciences (8 hours)

PHYS 2425*, PHYS 2426* (University Physics)

Social & Behavior Sciences (15 hours)

HIST 1301, HIST 1302, PSCI 2301, PSCI 2302, ECO 2301 or 2302

Humanities (3 hours)

Select from approved university studies courses

Visual/Performing Arts (3 hours)

Select from approved university studies courses

Fitness & Recreational Activity (Two 1 hour courses)

Select from approved university studies courses

**Calculus I and the two University Physics courses meet the curriculum mathematics and basic sciences requirements as well as the University Studies. They are noted and shown in both columns in Table 5-1.*

Students must be prepared for engineering practice through a curriculum culminating in a major design experience based on the knowledge and skills acquired in earlier course work and incorporating appropriate engineering standards and multiple realistic constraints.

The Construction Engineering program culminates in a major design experience in the internship course, CONE 471. A description of the design experience is provided in the following section (6).

The discipline specific curriculum requirements are listed under the heading Program Criteria for Construction and Similarly Named Engineering Programs in the *2013-2014 Criteria for Accrediting Engineering Programs* manual.

The program must prepare graduates to apply knowledge of mathematics through differential and integral calculus, probability and statistics, general chemistry, and calculus-based physics; to analyze and design construction processes and systems in a construction engineering specialty field, applying knowledge of methods, materials, equipment, planning, scheduling, safety, and cost analysis; to explain basic legal and

ethical concepts and the importance of professional engineering licensure in the construction industry; to explain basic concepts of management topics such as economics, business, accounting, communications, leadership, decision and optimization methods, engineering economics, engineering management, and cost control.

The following provides evidence the Construction Engineering curriculum aligns with the ABET Construction Program criteria.

ABET Program Criteria	CONE Program Courses
Apply knowledge of mathematics through differential and integral calculus, probability and statistics, general chemistry, and calculus-based physics	MATH 2413, MATH 192, MATH 315, IE 211, CHEM 1411, PHYS 2425, PHYS 2426
Analyze and design construction processes and systems in a construction engineering specialty field, applying knowledge of methods, materials, equipment, planning, scheduling, safety, and cost analysis	CONE 211, CONE 212, CONE 221, CONE 331, CONE 341, CONE 351, CONE 411, CONE 412, CONE 431, CONE 432, CONE 471
Explain basic legal and ethical concepts and the importance of professional engineering licensure in the construction industry	BA 301, CONE 421, CONE 471 (FE/PE emphasis)
Explain basic concepts of management topics such as economics, business, accounting, communications, leadership, decision and optimization methods, engineering economics, engineering management, and cost control	CONE 231, CONE 422, CONE 423, CONE 425, ECO 2301 or 2302, IE 207, SPC 1315 or 1321

6. **Major Design Experience**

In relation to need for a senior design experience, the Criterion 5 section of the *2013-2014 Criteria for Accrediting Engineering Programs*, states:

> *Students must be prepared for engineering practice through a curriculum culminating in a major design experience based on the knowledge and skills acquired in earlier course work and incorporating appropriate engineering standards and multiple realistic constraints.*

This requirement is met formally though the Construction Engineering Internship course, CONE 471, which provide students with the opportunity to apply engineering design principles to an actual industrial application. This design experience is project-based, incorporating proposal, design, and implementation phases of an engineering design. The project is defined in conjunction with an industry sponsor(s). The internship course is taken in the final semester of the program.

In addition to the required capstone internship experience, construction engineering student have the opportunity to gain real-world design experience through student competitions and industry/department partnership projects.

Student Competition: The regional construction association TEXO hosts the ASC/TEXO Annual Region V Student Competition each Spring. Member firms sponsor the different competition divisions and are responsible for providing the mock bid package to each of the competing schools and providing judges for that division of the competition. A&M-Commerce sends a team to compete in the Commercial division. Teams are given 16 hours between receipt of the package and the presentation date to work on the mock proposal, which are selected by the sponsoring company. The problem narrative spells out specific items to be covered in their proposal response and what each team is to address. The teams are given the freedom to go beyond the identified items and present solutions to problems which were not directly addressed in the problem description. At the end of the 16-hour time period, each team submits their complete written proposal to the competition sponsor, after which teams have one day to prepare their presentations and travel to the competition site in Dallas, Texas. On the day of the competition, teams arrive at TEXO's Conference Center and they are given a total of 40 minutes which includes 5 minutes to set up, 20 minutes to present, 10 minutes for questions and answers and 5 minutes to breakdown. The oral presentations emulate a typical bid presentation.

Industry/Department Partnership Projects: Regional companies have partnered with the Department of Engineering & Technology to offer students the opportunity to gain real-world experience by working on engineering projects outside of the classroom. These projects are typically done on a volunteer basis and participants are selected based upon demonstrated skill sets rather than academic standing. Examples of the type of projects include design and implementation of solar-powered hanger doors and a warehouse feasibility study.

7. **Cooperative Education**

Cooperative education is not a program requirement and does not satisfy curricular requirements. Students engage in a "real world" design experience and are exposed to industry through the senior internship course described in the previous section.

Table 5-1 Curriculum

Bachelor of Science in Construction Engineering

Course (Department, Number, Title) List all courses in the program by term starting with first term of first year and ending with the last term of the final year. **(Semester System)**			Indicate Whether Course is Required, Elective or a Selected Elective by an R, an E or an SE.[2]	*Curricular Area (Credit Hours)*				Last Two Terms the Course was Offered: Year and, Semester, or Quarter	Average Section Enrollment for the Last Two Terms the Course was Offered[1]
				Math & Basic Sciences	Engineering Topics Check if Contains Significant Design (√)	General Education	Other		
Fall 1	ENG 1301	College Reading & Writing	R			3		F12/Spr13	22
Fall 1	HIST 1301	US History to 1877	R			3		F12/Spr13	35
Fall 1	IT 111	Computer-Aided Design	R		3			F12/Spr13	26
Fall 1	MATH 2413	Calculus I	R	4*		4*		F12/Spr13	26
Fall 1	CHEM 1411	General & Quantitative Chemistry I	R	4				F12/Spr13	Lec 61 / Lab 16
Spring 1	ENG 1302	Written Argument & Research	R			3		F12/Spr13	22
Spring 1	HIST 1302	US History from 1865	R			3		F12/Spr13	35
Spring 1	ECO 2301 ECO 2302	Principles of Macroeconomics **OR** Principles of Microeconomics	SE			3		F12/Spr13 F12/Spr13	51 / 43
Spring 1	MATH 192	Calculus II	R	4				F12/Spr13	25
Spring 1	PHYS 2425	University Physics I (Mechanics & Heat)	R	4*		4*		F12/Spr13	Lec 53 / Lab 21
Fall 2	CONE 211	Statics	R		3			F11/F12	9
Fall 2	IE 201	Elementary Engineering Analysis	R		3			F11/F12	25
Fall 2	MATH 315	Differential Equations	R	3				F11/F12	27
Fall 2	PHYS 2426	University Physics II (Magnetism & Electric)	R	4*		4*		F12/Spr13	Lec 29 / Lab 15
Fall 2	PSCI 2301	Principles of US & Texas Government	R			3		F12/Spr13	48
Fall 2	Physical Education Elective		SE			1		F12/Spr13	***

Course (Department, Number, Title) List all courses in the program by term starting with first term of first year and ending with the last term of the final year. **(Semester System)**			Indicate Whether Course is Required, Elective or a Selected Elective by an R, an E or an SE.[2]	*Curricular Area (Credit Hours)*				Last Two Terms the Course was Offered: Year and, Semester, or Quarter	Average Section Enrollment for the Last Two Terms the Course was Offered[1]
				Math & Basic Sciences	Engineering Topics Check if Contains Significant Design (√)	General Education	Other		
Spring 2	CONE 212	Dynamics	R		3			Spr12/Spr13	7
Spring 2	IE 207	Engineering Economy Analysis	R		3			Spr12/Spr13	25
Spring 2	IE 211	Engineering Probability & Statistics	R	3				Spr12/Spr13	32
Spring 2	CONE 221	Construction Materials & Methods	R		3			Spr12/Spr13	14
Spring 2	PSCI 2302	US & Texas Gov: Institutions & Policies	R			3		F12/Spr13	47
Spring 2	Physical Education Elective		SE			1		F12/Spr13	***
Fall 3	BA 301	Legal Environment of Business	R			3		F12/Spr13	33
Fall 3	CONE 231	Construction Estimating	R		3(✓)			F11[**]/F12	4
Fall 3	IT 340	Quality Management & Improvement	R		3			F11/F12	38
Fall 3	Humanities Elective		SE			3		Spr12/Spr13	***
Fall 3	SPC 1315 SPC 1321	Fundamentals of Speech **OR** Business & Professional Speaking	SE			3		F12/Spr13 F12/Spr13	Lec 64 / Lab 19 Lec 84 / Lab 19
Spring 3	CONE 331	Mechanics of Materials	R		3(✓)			Spr12[**]/Spr13	4
Spring 3	CONE 341	Engineering Hydrology & Hydraulics	R		3(✓)			Spr12[**]/Spr13	4
Spring 3	CONE 351	Field Engineering & Surveying	R		3(✓)			Spr12[**]/Spr13	4
Spring 3	MATH 335	Linear Algebra	R	3				Spr12/Spr13	34
Spring 3	Visual/Performing Arts Elective		SE			3		F12/Spr13	***

Course (Department, Number, Title) List all courses in the program by term starting with first term of first year and ending with the last term of the final year. **(Semester System)**			Indicate Whether Course is Required, Elective or a Selected Elective by an R, an E or an SE.[2]	*Curricular Area (Credit Hours)*				Last Two Terms the Course was Offered: Year and, Semester, or Quarter	Average Section Enrollment for the Last Two Terms the Course was Offered[1]
				Math & Basic Sciences	Engineering Topics Check if Contains Significant Design (√)	General Education	Other		
Fall 4	CONE 411	Steel & Concrete Design	R		3(✓)			F12**	2
Fall 4	CONE 412	Structural Analysis & Design	R		3(✓)			F12**	3
Fall 4	CONE 421	Construction Safety	R		3			F12**	5
Fall 4	CONE 422	Construction Engineering Management	R		3(✓)			F12**	2
Fall 4	ENVS 403 BSC 417	Environmental Ethics **OR** Geospatial Mapping	SE	3				F11/F12 F12/Spr13	33 21
Spring 4	CONE 423	Contracts & Specifications	R		3			Spr13**	2
Spring 4	CONE 425	Construction Planning, Scheduling & Control	R		3(✓)			Spr13**	2
Spring 4	CONE 431	Sustainable Construction Methods & Process	R		3(✓)			Spr13**	2
Spring 4	CONE 432	Soil Engineering	R		3(✓)			Spr13**	2
Spring 4	CONE 471	Construction Engineering Internship	R		3(✓)			Spr13**	2
TOTALS-ABET BASIC-LEVEL REQUIREMENTS				**32***	**60**	**47***	**0**		
OVERALL TOTAL CREDIT HOURS FOR THE DEGREE									
PERCENT OF TOTAL				**25.2%** [1]	**47.2%**	**34.4%** [1]	**0%**		
Total must satisfy either credit hours or percentage		Minimum Semester Credit Hours		32 Hours	48 Hours				
		Minimum Percentage		25%	37.5 %				

** Courses satisfy both the Math and Basic Science requirement as well as the General Studies (University Studies) requirement*

*** First time Construction Engineering course was offered*

**** Elective course. Enrollment varies depending upon the course selected.*

1. For courses that include multiple elements (lecture, laboratory, recitation, etc.), indicate the average enrollment in each element.
2. Required courses are required of all students in the program, elective courses are optional for students, and selected electives are courses where students must take one or more courses from a specified group.

Instructional materials and student work verifying compliance with ABET criteria for the categories indicated above will be available during the campus visit.

CRITERION 6. FACULTY

A. Faculty Qualifications

The Construction Engineering (CONE) major courses are delivered by six full-time faculty members. All of the construction specific instruction is delivered by the full-time construction engineering faculty. Qualifications, including academic and industry experience are summarized in Table 6-1. Appendix B contains curriculum vitae for each faculty who currently teach engineering or technology courses in the program.

The construction engineering faculty bring unique experiences and expertise to the program. The full-time construction engineering faculty have over 60 years of industry experience in the fields of geotechnical analysis and design, construction management, pavement, materials, and sustainability. The areas within the curriculum, civil engineering, structural principles, site analysis, computer-assisted design, geotechnical, evaluation and testing, materials, contracting, project management, and applicable laws and regulations are supported with the expertise and experience of the faculty. Combining real-world experience with over 45 years of higher education teaching experience, provides a rich learning environment for Construction Engineering students.

Of the six teaching staff, three hold a Ph.D. in Civil Engineering, two hold a Ph.D. in Industrial Engineering, one earned a Master of Science degree in Technology Management. Two of the construction engineering faculty are licensed professional engineers.

B. Faculty Workload

Texas A&M University Policy *12.03.99.R0.01, Faculty Workload,* provides guidelines regarding the workload of the faculty. Section 2.1.1 of the policy states that the normal long term teaching assignment should be twelve (12) semester credit hours for a full-time faculty member. New faculty members are typically given a one course release for each semester in the first year of employment. Table 6-2 shows the courses taught by the faculty over the past academic year. The average teaching load for the full-time CONE faculty was 9.6 credit hours in the Fall semester and 11 credit hours in the Spring semester. The 9.6 credit hour average in the Fall semester was due to two new faculty members receiving a one course release for the first semester. The policy provides for "workload equivalencies", which can reduce the teaching load. The department head initiates the request for a workload equivalency, which is reviewed and approved by the dean and then forwarded to the provost for final approval. Workload equivalency requests for faculty advising and working on joint projects with industry have been approved for CONE faculty in the past.

Section 3.0 in the *Faculty Workload* policy states "The primary duty of faculty members is to teach. Research and/or developmental activities are expected and indispensable parts of the regular workload of all permanent faculty." The distribution of teaching, research and

scholarly activity, and service is defined at the college level. For a tenure track faculty, the distribution is typically 40-40-20, as shown in Table 6-2. For a non-tenure track faculty member, the distribution is typically 60-20-20.

C. Faculty Size

The Construction Engineering (CONE) major courses are delivered by six full-time faculty members. All of the construction specific instruction is delivered by three full-time construction engineering faculty. There are 16 discipline specific courses (CONE) required in the Construction Engineering program. In addition, there are three general engineering (IE) courses and two industrial technology support courses (IT) required. The faculty is adequately sized to teach every major course offered at least once a year. Additional faculty lines and/or adjuncts will have to be added when the program demand cannot be accommodated by the annual course offering schedule.

The faculty are involved and actively engage Construction Engineering students in a variety of ways. As noted in Criterion 2, Section D, of this report, upon declaring their major, Construction Engineering students are assigned to a department **faculty advisor**. For incoming freshman and transfer students with less than 30 credit hours, they are also assigned to a university Success Coach. Construction Engineering students meet with their faculty advisor to review their progress and plan course schedules for the next semester. Prior to their final semester, students meet with their faculty advisor to review their degree audit and complete required paperwork for graduation.

In addition to the advising role, faculty are involved in and support student activities and organizations within the department. Examples include, but not limited to:

- faculty sponsors for Associated School of Construction (ASC) student chapter.
- faculty sponsor for student construction competitions, such as the TEXO Region V annual student competition.
- sponsor / facilitate industry led student projects.
- enlist and work with students in a volunteer capacity during engineering summer camps, university orientations, and robotic competitions.
- coordinate and host career awareness events such as Engineering Day and industry tours.

Industry is a primary stakeholder in the Construction Engineering program. In addition to employing graduates, interactions with industry provide one means for faculty to better understand professional practice and maintain currency in their respective professional areas. The Construction Engineering faculty interact with professional practitioners, including local employers in a variety of ways. Examples include, but are not limited to:

- **CONE 471, Construction Engineering Internship:** The senior design experience is project-based, with the project being defined in conjunction with an industry sponsor(s). Under the guidance of the faculty, student teams plan, propose, and execute an actual industrial application. The industry partner(s) interact with the faculty and students throughout the last semester course.

- **Industry Advisory Board (IAB):** The Industry Advisory Board (IAB) is comprised of industry representatives and employers from the field of construction. The board meets twice a year and provides guidance for the program as well as industry trends.
- **Engineering Day:** The Department of Engineering & Technology hosts an Engineering Day in February during National Engineers Week. The intent of the program is to bring awareness to the field of engineering as well as a networking opportunity for students and faculty. The program includes guest speakers from regional high-tech companies and culminates with a luncheon for upper classmen and the industry representatives.
- **L3 Communications Student Project Program:** A partnership was established with L3 Communications to provide students with the opportunity to gain invaluable work experience. Interdisciplinary student teams work on real-world engineering projects sponsored by L3. Participation is voluntary. Department faculty serve as project mentors and interact with the industry partner on a regular basis during the duration of the project.
- **Professional Societies:** Faculty are members of and participate in professional societies, which include but not limited to, American Society of Civil Engineers, National Society of Professional Engineers, Geo-Institute of the American Society of Civil Engineers, Korean Geotechnical Engineering Institute, and the International Society of Asphalt Pavements.

D. Professional Development

Professional development activities serve to enhance an individual's knowledge, skills, and abilities. Faculty are expected to participate in professional development activities in their field. The university provides adequate, but not unlimited, resources to support professional development. Examples of recent professional development activities include, but are not limited to:

- ABET Commission Summit
- TEXO Construction Association Educators Annual Conference
- AutoCAD University
- FARO 3D Scanning Training Workshop
- Synchro User Conference
- A&M System Engineering Network Junior Faculty Research Symposium

In addition to the discipline specific professional development, the university requires employees to complete training on certain topics to comply with Federal, State, Texas A&M System, and A&M-University laws, policies, regulations, rules, and procedures.

E. Authority and Responsibility of Faculty

Program guidance is provided primarily by the CONE faculty. As specified by ABET, they have responsibility and sufficient authority to define, revise, and implement curriculum and program objectives within the guidelines of the university and accrediting agencies.

1. Program Educational Objectives

   Program Educational Objectives are defined and revised by the faculty, with input from key stakeholders. The PEO review and evaluation process, defined under Criterion 2, Section E, was defined and fully implemented by the faculty. Surveys and other assessments are conducted and evaluated by the faculty. Proposed revisions to the PEOs are reviewed and approved by the Industry Advisory Board. The faculty is responsible for documenting and making PEOs accessible to stakeholders.

2. Student Outcomes

   The Student Outcome assessment and evaluation process, defined under Criterion 4, Section A, was defined and implemented by the faculty. Assessments are conducted and evaluated by the faculty. Corrective actions are proposed and initiated by the faculty. The revisions are reviewed and approved by the Industry Advisory Board. The faculty is responsible for documenting and making Student Outcomes accessible to stakeholders.

3. Curriculum Revisions

   In accordance to Texas A&M University-Commerce Rules and Procedure *03.02.99.R0.01 Program Development and Curriculum Approval Process*, curriculum revisions are initiated by the faculty within the academic department. The curriculum revision cycle starts in the Fall, one year prior to implementation. Proposed curriculum revisions are reviewed and approved at various levels to ensure compliance with the Texas A&M University System Policies and Regulations, Texas Higher Education Coordinating Board (THECB), and Southern Association of Colleges and Schools Commission on Colleges (SACSCOC) policies and guidelines. A general flow chart for the curriculum revision process is shown in Figure 6-1.

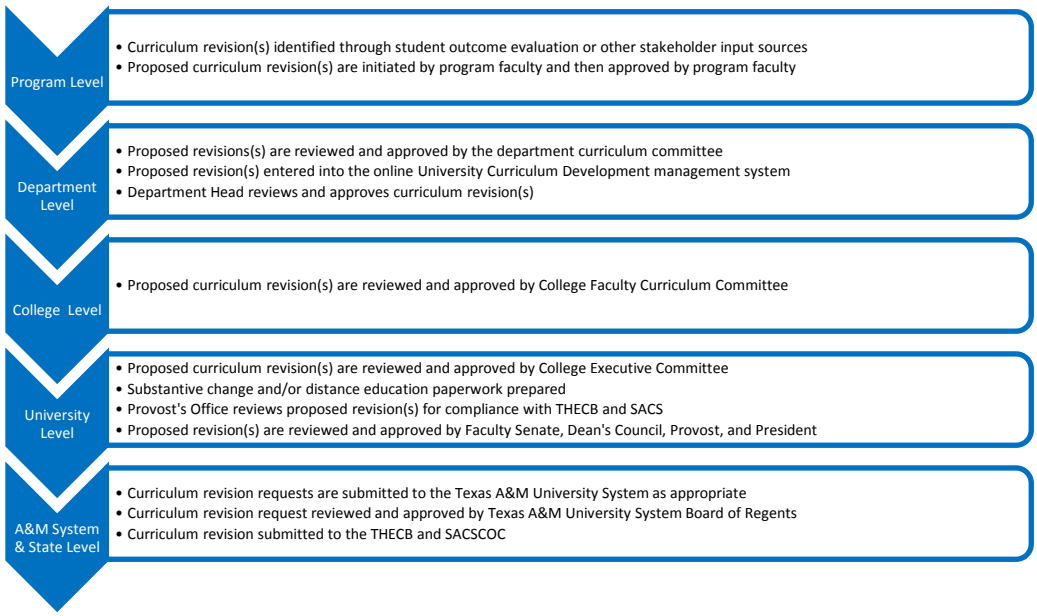


Figure 6-1: General Flowchart for A&M-Commerce Curriculum Revision Process

When the curriculum revision(s) are approved, it is the responsibility of the faculty to update electronic and paper documentation used for recruitment and advising. The Registrar's Office updates the undergraduate catalog.

Table 6-1. Faculty Qualifications

Bachelor of Science in Construction Engineering

Faculty Name	Highest Degree Earned- Field and Year	Rank [1]	Type of Academic Appointment[2] T, TT, NTT	FT or PT[4]	Years of Experience			Professional Registration/ Certification	Level of Activity H, M, or L		
					Govt./Ind. Practice	Teaching	This Institution		Professional Organizations	Professional Development	Consulting/summer work in industry
Pelin Altintas-Deleon	Ph.D., Systems and Engineering Management (Industrial Engineering), 2010	AST	TT	FT	2.5	2.5	2.5		M	M	L
Wen-Hsing Liu *(*Dr. Liu served in a FT ad-interim position 1/2013 – 5/2013.)*	Ph.D., Industrial Engineering, 2012	AST	NT*	FT	2	.5	.5		L	L	L
Perry Moler	M.S., Technology Management, 2010	I	NT	FT	3.5	2	2		M	H	L
Ilseok "Eddie" Oh	Ph.D., Civil Engineering, 2003	ASC	T	FT	2	11	1		M	M	M
Nilo Tsung	Ph.D., Civil Engineering, 2010	AST	TT	FT	10	1	1	PE	M	L	M
Gregory Wilson	Ph.D., Civil Engineering, 1992	AST	NTT	FT	40	40	8	PE	H	H	H

Instructions: Complete table for each member of the faculty in the program. Add additional rows or use additional sheets if necessary. Updated information is to be provided at the time of the visit.

1. Code: P = Professor ASC = Associate Professor AST = Assistant Professor I = Instructor A = Adjunct O = Other

2. Code: TT = Tenure Track T = Tenured NTT = Non Tenure Track

3. The level of activity, high, medium or low, should reflect an average over the year prior to the visit plus the two previous years.

4. At the institution

Table 6-2. Faculty Workload Summary

Bachelor of Science in Construction Engineering

Faculty Member (name)	PT or FT[1]	Classes Taught (Course No./Credit Hrs.) Term and Year[2]	Program Activity Distribution[3] **(Based upon university appointment)**			% of Time Devoted to the Program[5]
			Teaching	Research or Scholarship	Other[4]	
Pelin Altintas-Deleon *(IE faculty)*	FT	IE 311 (3sh)† – Fall 2012 IE 403 (3sh)† – Fall 2012 IE 407 (3sh)† – Fall 2012 IT 340 (3sh) – Fall 2012 IE 207 (3sh) – Spring 2013 IE 305 (3sh)† – Spring 2013 IE 316 (3sh)† – Spring 2013	40	40	20	25
Wen-Hsing Liu *(*Dr. Liu served in a FT ad-interim IE position 1/2013 – 5/2013.)*	FT	IE 211(3sh) – Spring 2013 IE 314 (3sh)† – Spring 2013 IE 410 (3sh)† – Spring 2013 TMGT 352 (3sh)† – Spring 2013	80	0	20	25
Perry Moler *(Technology Management faculty)*	FT	IT 111 (3sh) – Fall 2012 (3 sections) IT 111 (3sh) – Spring 2013 IT 112 (3sh)† – Spring 2013 TMGT 350 (3sh)† – Spring 2013	60	20	20	25
Ilseok "Eddie" Oh	FT	CONE 411 (3sh) – Fall 2012 CONE 412 (3sh) – Fall 2012 CONE 421 (3sh) – Fall 2012 CONE 212 (3sh) – Spring 2013 CONE 331 (3sh) – Spring 2013 CONE 341 (3sh) – Spring 2013 CONE 432 (3sh) – Spring 2013	40	40	20	100

Faculty Member (name)	PT or FT[1]	Classes Taught (Course No./Credit Hrs.) Term and Year[2]	Program Activity Distribution[3] **(Based upon university appointment)**			% of Time Devoted to the Program[5]
			Teaching	Research or Scholarship	Other[4]	
Nilo Tsung	FT	IE 201 (3sh) – Fall 2012 CONE 211 (3sh) – Fall 2012 TMGT 454† (3sh) – Fall 2012 CONE 351 (3sh) – Spring 2013 CONE 423 (3sh) – Spring 2013 CONE 431 (3sh) – Spring 2013 TMGT 335 (3sh)† – Spring 2013	40	40	20	100
Gregory Wilson	FT	CONE 231 (3sh) – Fall 2012 CONE 422 (3sh) – Fall 2012 TMGT 336 (3sh)† – Fall 2012 CONE 221 (3sh) – Spring 2013 CONE 425 (3sh) – Spring 2013 CONE 471 (3sh) – Spring 2013 TMGT 439 (3sh)† – Spring 2013	60	20	20	100

†*Not part of the Construction Engineering degree. TMGT courses taught by construction faculty are construction management courses in the department's Technology Management program.*

1. FT = Full Time Faculty or PT = Part Time Faculty, at the institution
2. For the academic year for which the self-study is being prepared.
3. Program activity distribution should be in percent of effort in the program and should total 100%.
4. Indicate sabbatical leave, etc., under "Other."
5. Out of the total time employed at the institution.

CRITERION 7. FACILITIES

A. Offices, Classrooms and Laboratories

A&M-Commerce is located about one hour northeast of the Dallas metroplex. The campus features new facilities including a Music building, Student Center, Science building, recreation center, dorms, and Student Access and Success Center (One Stop Shop). The Construction Engineering program is housed in the Charles J. Austin Engineering & Technology/Agricultural Sciences building. A campus map is shown in Figure 7-1 with an indicator showing the location of the Engineering & Technology building.

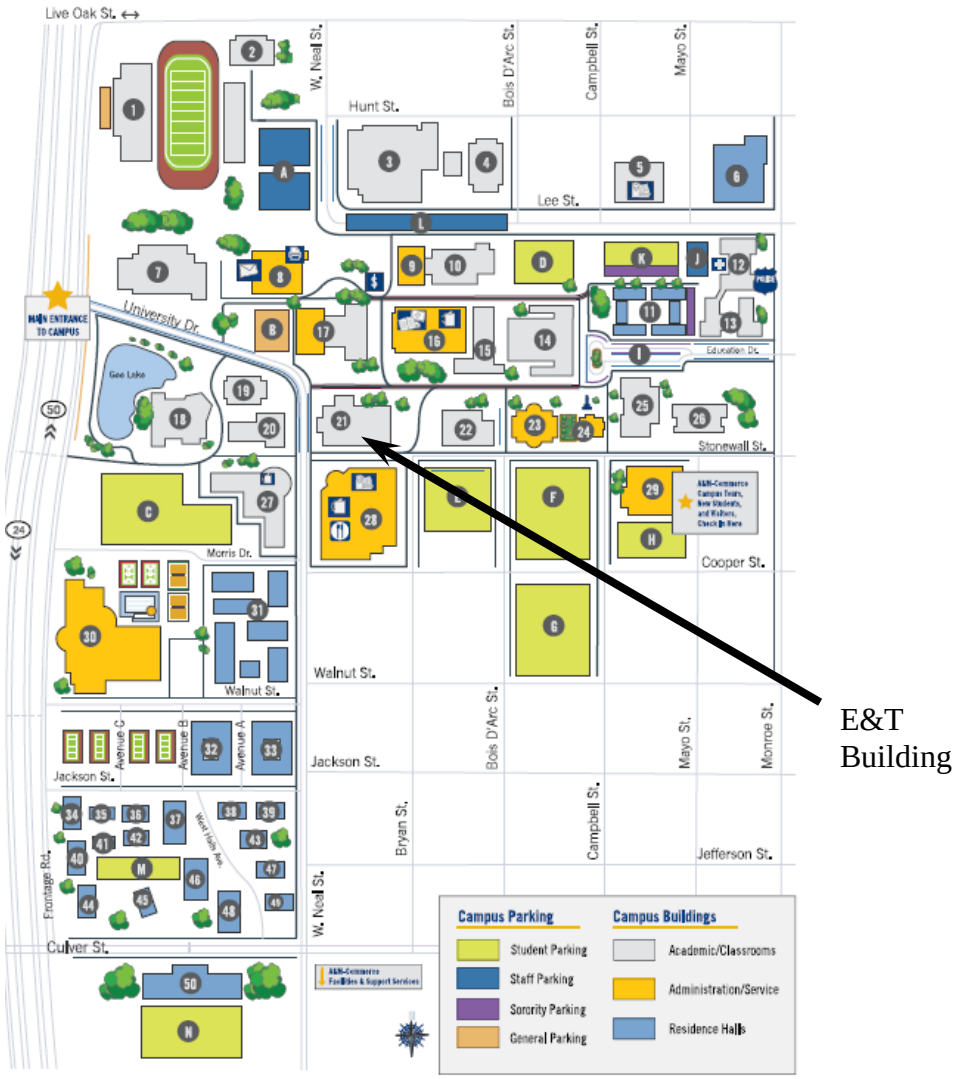


Figure 7-1: Texas A&M University-Commerce Campus Map

1. Offices

Every faculty and staff member in the Department of Engineering & Technology, including the Construction Engineering faculty, has individual offices. All of the offices are in the same wing of one building, which enables regular faculty interaction. The offices vary in size but all are equivalent to faculty offices in other departments across campus. The typical faculty office has a desk, secondary work space (e.g. computer credenza), 1-2 bookcases, file cabinet, and two guest chairs. The space is adequate for student conferences. Each faculty is provided a computer and printer to support instruction, advising, and research. Standard software, such as Microsoft Office is on each machine. Discipline specific software is provided upon request. Each office has an individual phone line.

The department head and secretary are housed in a department office suite. The furnishings are equivalent to the faculty offices. Faculty offices are on the second floor, while the department office is on the first floor. The location of the department office is close to the Dean's office and easily located by current or potential students. A copier, fax machine, and other office equipment is located in the department office as well as an upstairs location near the faculty offices.

The department also has a small conference room that will accommodate meetings of 8-10 people. For larger meetings, conference rooms in the student center or in other buildings can be reserved.

2. Classrooms

A majority of the department courses are taught in the department's two computer laboratories (28 and 23 capacity). Courses such as IE 201 that have enrollments larger than 28, are moved to a larger lecture halls in the building or an adjacent building. Construction engineering courses that utilize specialized engineering software, such as AutoCAD, Revit, Synchro, etc., are intentionally scheduled in the computer labs to enhance the learning environment for students. More than three-quarters of the classrooms on campus are multimedia equipped.

In addition to the formal instructional spaces, the department has space allocated to student services and support. There is a student lounge where student gather to study and interact. In addition to the open study space, the room has 6 computers and a printer. When not being utilized for instruction, the computer labs become open labs for students to access specialized software.

3. Laboratory facilities

The Department of Engineering & Technology has nine laboratories, which support the instructional needs of both engineering programs (Construction & Industrial). The laboratories and equipment are summarized in Table 7-1.

Table 7-1: Department of Engineering & Technology Laboratories

Laboratory	Program	Equipment / Software

Automation & Manufacturing	IE	- FDM 3000 rapid prototyping machine - Uprint rapid prototyping machine - 8 TII Educational PLC trainers - TII Educational Module automated assembly - Bridgeport Mill EZ TRAK - Bridgeport EZPATH Lathe - Bridgeport HTC-8 Turning Center - 8 Craftsman Drill Presses - 12 Robotic kits
Ergonomics & Human Factors	IE	- Flock of birds motion detector system - Force plate system - Ergonomic hand tools - Meters and other test equipment
Systems Engineering Lab (SEL)	IE	- 4 Computers - LaserJet printers - Scanner - Adobe Acrobat Professional - Adobe Dreamweaver - Arena (Process simulation) - AutoCAD (CAD) - Camtasia (Screen recorder software) - ExtendSim Suite (Process simulation) - Minitab (Statistical and process management) - Risk Solver Premium (Linear programming) - SAS Analytics (Predictive & descriptive modeling) - Microsoft Office
Computer (118A)	IE/CONE	- 24 computers - Laser printer - Robotel classroom management system - SolidWorks (CAD – 3D Modeling) - AutoCAD (CAD) - BIM software (Synchro, Revit, etc.) - MultiSIM (Schematic capture / circuit simulator) - Arena (Process simulation) - Microsoft Office
Computer (211)	IE/CONE	- 29 computers - Plotter - Robotel classroom management system - AutoCAD (CAD) - Minitab (Statistical and process management) - MultiSIM (Schematic capture / circuit simulator) - Arena (Process simulation) - Microsoft Office
Construction Manufacturing & Processes	CONE	Band saws, table saw, drill presses, miter saws, hand tools, ventilation trainer, computers, LaserJet printers
Hydrology	CONE	Water flume, modular flow channel, computers, printers
Soils	CONE	Triaxial shear, mechanical shaker, sand cone density test system, test equipment, computers, printers
Strength of Materials	CONE	Compression tester, tensile tester, hardness tester, beam testers, computers, LaserJet printers

In addition to the laboratories listed in Table 7-1, the construction engineering program has a remote site that provides the space for larger construction projects and research.

With the exception of the SEL lab, laboratories are available as open labs during daytime hours in which classes are not scheduled. The SEL is restricted to faculty and students involved in undergraduate research and industry sponsored projects. With the exception of the computer rooms, utilization of the other laboratories must be scheduled with the faculty or safety officer/technology assistant to ensure appropriate safety procedures are followed.

B. Computing Resources

The university provides a variety of computers, computer laboratories, and computer classrooms, which support the administrative and academic functions of the university. These include assigned course work, research related degree programs, faculty research and service activities, faculty and staff training and other applications approved by the university.

1. Distance Learning

   There are eleven interactive video classrooms on the Commerce campus and four at off-site locations. The **CONE program does not utilize any of the off-site locations**. The University supports a large web-based course enrollment. The current learning management system used for online course delivery is eCollege, a Pearson product. The **CONE courses are not offered in an online format**, with the exception of one technology course (IT 340). Students may opt to take online courses in their University Studies, when available. Features of eCollege are used to enhance some of the program courses, including the electronic dropbox, doc sharing, and the communication module.

   The Office of Instructional Technology and Distance Education (ITDE) offer a variety of services to faculty and students. These services include an instructional design unit, training and support for distance technologies, and multimedia services.

2. Classrooms & Computer Labs

   Of the 116 available classrooms on the Commerce campus, 89 rooms are multimedia equipped. There are open access computer labs located across the campus.
   - *McDowell Business Administration Building Room 345* is open to students. There is some class use and thus it may not be available at all times.
   - *Science Building Room 210* is open to students. There is some class use and thus it may not be available at all times. It has 40 PCs and 1 printer.
   - *Journalism Building Rooms 101 and 102* are open to students. There is some class use and thus it may not be available at all times. Room 101 has 22 PCs and 1 printer. Room 102 has 28 PCs and shares the printer in Room 101.

   Additional computer labs are located at the Mesquite Metroplex Center and the Universities Center in Downtown Dallas locations and several academic departments manage labs for research, for students, or for mixed purposes.

3. Library

The James G. Gee library extensive book and journal collections in print and electronic delivery cover a wide variety of disciplines. They also offer access to federal and state Government Documents, as well as federal and state law resources in print and electronic delivery. A growing number of our resources can be accessed from the office, home, or residence hall via the Internet.

Gee Library provides an Information Commons consisting with 84 computers, internet access, and specialized programs. During long semesters, the library is open:

7:30 AM – 3 AM	Monday – Thursday
7:30 AM – 8:00 PM	Friday
10:00 AM – 4:00 PM	Saturday
2:00 – 3 AM	Sunday

4. Student Support Services

Writing Center. The Writing Center offers students free, one-on-one writing assistance for all majors, and disciplines. Tutoring services include one-on-one, in groups (3-5 writers), or online. During long semesters, the Writing Center is available:

9:00 AM – 3:00 PM	Monday, Wednesday, and Thursday
9:00 AM – 2:00 PM	Tuesday
9:00 AM – 1:00 PM	Friday

Math Lab. The Math Lab offers free tutoring to students and is aimed at helping students at the remedial, freshman, and sophomore levels. Higher level mathematics tutoring is available for CONE students in the Engineering & Statistics Tutoring lab. During long semesters, the Math Lab is available:

8:00 AM – 8:00 PM	Monday and Wednesday
8:00 AM – 6:00 PM	Tuesday and Thursday
8:00 PM – 3:00 PM	Friday

5. Student Life

Internet access is available in every occupied building through a traditional wired network as well as an expanding wireless network that covers most of the academic buildings and student center.

myLeo portal provides access to online services such as admissions, registration, financial aid, student accounts, LeoMail, and eCollege. myLeo can be accessed both from on- and off-campus locations.

C. Guidance

Guidance in the use of tools, equipment, and computing resources for a given course is provided and/or demonstrated by the course instructor and/or the department safety officer. This guidance is typically integrated directly into the course instruction.

When appropriate, students working in the laboratories are given hands-on safety demonstrations, handouts, and quizzes. This training is typically provided by department safety officer.

D. Maintenance and Upgrading of Facilities

The primary sources of funding for maintaining and upgrading tools, equipment, and computing resources have been 1) construction engineering operational budget 2) course fees, 3) special item funding, and 4) the Higher Education Assistance Fund (HEAF).

Construction Engineering Operational Budget: A permanent line item was placed in the university budget to support the construction engineering program. This line item has funded software, professional development and training, travel, and laboratory equipment.

Course Fees. Revenue generated from course fees typically fund software, consumables, and other materials for the engineering courses and laboratories. These funds are allocated at the College level and departments submit proposals/requests to the dean to access them.

Special Item Funding. Higher Education Special Items appropriated from the Texas Legislature are items that are not supported through formula funding and support the special mission of the institution. Special items can also be used to support new academic programs. The Construction Engineering program received a one-time special item funding to support program implementation. The $1,000,000 funds covered the expense of remodeling and equipping the construction engineering laboratories and faculty salaries.

HEAF. The Higher Education Assistance Fund was established by the Texas Legislature. HEAF funds are allocated by the state to eligible institutions, including A&M-Commerce. These funds can be used for the purpose of acquiring land, constructing and equipping buildings, major repair and renovation of buildings or other permanent improvements, and acquisition of capital equipment and library materials. The funds are allocated by formula to the university and then distributed within the institution, including a portion to each college. Funds are allotted to the departments based upon the requests made during the HEAF budget request cycle in the Spring, prior to the new academic year.

Equipment, computing resources, and related program enhancements funded under these three sources in the recent past are summarized in Table 7-2.

Table 7-2: Recent Construction Engineering Resource Acquisitions

Equipment / Computing / Resources	Cost	Funding Source
Construction Materials & Process laboratory *Space remodeling and laboratory equipment*	~$500,000	Special Item
Strength of Materials laboratory *Space remodeling and laboratory equipment*		
Soils laboratory *Space remodeling and laboratory equipment*		
Hydraulics & Hydrology laboratory *Space remodeling and laboratory equipment*		
Off Site Construction laboratory *New building and laboratory equipment*		
3D Laser Scanner *Supports surveying course and BIM research.*	$100,000	University funds
AutoCAD annual software license *Supports the Computer-Aided Design course, IT 111. Typically offer 4 sections per year and average close to 100 students.*	$5,400	Course Fee
Laboratory furniture *Chairs for computer classrooms/labs*	$8,000	Course Fee
Laptop Computers (2) *Department computers to support instruction, scholarly activities, recruitment, and student activities.*	$5,000	HEAF
Research support funds *New CONE faculty*	$12,000	HEAF
Copier *Department Office copier.*	$5,000	HEAF
Faculty Computers *New faculty workstations*	$2,000	HEAF

E. Library Services

Texas A&M University-Commerce Libraries collection has over a million items. This figure includes over 400,000 monographs, 300,000 serials volumes, 423,000 government documents, and over 500,000 microforms. Access to electronic resources includes over 200 databases, 25,000 journals, and approximately 55,000 books. The following report analyzes the collection related to the specific subject areas of the required classes for the proposed Bachelor of Science in Construction Engineering.

Table 7-3 below demonstrates a look at specific areas (within Library of Congress call number ranges) of the library collection. The first four columns look at monographs. The column titled "Number of Core Titles" reflects *Bowker's Book Analysis* of the most highly recommend titles for undergraduate curriculum. The first number in the column indicates what we own. The "Percentage of Core Titles Held" shows what is currently owned by Texas A&M University-Commerce Libraries. The last two columns look at current journal coverage. The majority of the journals are electronic. Some are in databases; others are in publisher's electronic journal collections. The "Cited/Peer Reviewed" column reveals the quality of the journals. The first figure indicates journals which are covered in *Journal*

Citation Reports which includes all the journals in *Science Citation Index* and *Social Sciences Citation Index* in our database *Web of Science.* Since only journals that are frequently cited are included in these databases, these figures indicate that the journal is heavily used in the field. The last figure indicates if the journals are peer reviewed.

Table 7-3: Sample of the Library's Collection Related to Construction Engineering

Broad topic **Construction & Civil Engineering**	TAMU-C Books All years	Percentage of core titles held	Journal Titles held	Cited/Peer Reviewed
Building Construction (TH)	1025	2.78%	84	10/24
Civil Engineering (TA)	1892	13.92%	341	170/239
Construction Management				
Engineering Management T55.4-T60.8, TA190-194	952	45.16 %	66	19/40
General Management including Business & Economics HD1-HD100	9583	35.92%	312	51/171
Statistics (QA273-280)	1745	53%	60	32/43
Systems Engineering & Design				
Systems Engineering TA168-TA169.7	91	0.00%	8	5/7
Engineering Research and Design T174-T178	147	0.00%	26	4/9
Technical Drawing, Engineering Graphics T351-T385	613	0.00%	12	9/10
Materials & Structural Mechanics				
Construction and Engineering Materials; Mechanics of Materials TA401-TA492	553	16.44%	107	28/86
Structural Engineering TA630-TA695	215	7.32%	30	9/16
Hydraulic Engineering TC	308	16.00%	22	8/13
Metals Engineering TN600-TN799	127	4.35%	12	8/9
Other				
Surveying TA501-TA625	45	37.50%	9	2/4
Environmental Science & Environmental Engineering (GE) (TD)	1638	21.05%	132	40/74
Soil (S590-S670) Soil Mechanics TA703-712	487	25.64%	30	15/22
Supportive Disciplines				
Mathematics through Calculus	4788	57.24%	143	78/118
Chemistry and Chemical Engineering (QD, TP)	7255	21.00%	547	343/420
Physics (QC)	6617	33.88%	341	209/272

The A&M-Commerce Libraries offer numerous services to faculty. Some of the services include:

- **Class Reserves.** Faculty may use class reserves to make scarce materials available for their class and to ensure that all students have access to the required material.
- **Document Delivery.** Library can deliver documents to faculty members on the Commerce campus.
- **Electronic Databases**. Library provides electronic access to journal articles, book reviews, e-books, dissertations, and a number of other resources by using their electronic databases.
- **EndNotes Web**. Software is available to import citations from many electronic library databases and the Internet. Citations can be formatted to virtually any citation style.
- **Interlibrary Loan**. Library can assist in finding almost any type of item including books, dissertations, or thesis; journal articles, and microform.
- **Library Instruction**. Library has two electronic classrooms, which librarians use for computer demonstrations and hands-on training.
- **Research Assistance**. The professional librarians offer several services specifically designed to assist and support faculty needs related to classroom instruction, as well as those related to professional research.
- **Study Carrels**. Library offers quiet, secure spaces at the library for faculty research.
- **TurnItIn.com**. Library offers this powerful tool in the fight against plagiarism. Through a quick and easy set-up, faculty and their students are able to check papers against academic databases, the Internet, and the cache of papers held by TurnItIn.

The technical collection and services provided by the A&M-Commerce Libraries adequately meet the needs of the program faculty and students.

F. Overall Comments on Facilities

Student safety is the number one priority in our laboratories. To assist students, staff and faculty in safety concerns, the Department of Engineering & Technology has developed an interactive safety plan available to all members of the department, college and, university. Elements of this plan are accessible from the Engineering & Technology home page under the tab Safety Resources. In addition to the online safety plan, students working in the laboratories are given hands-on safety demonstrations, handouts, and quizzes as needed. This is a comprehensive safety plan that has been developed and maintained in conjunction with the Texas A&M University – Commerce Office of Risk Management, University Safety Committee, and the Department of Training and Development. There is also an operating and preventative maintenance program for laboratory equipment.

The Construction Engineering facilities are adequate and safe and provide an environment that is conducive to student learning.

CRITERION 8. INSTITUTIONAL SUPPORT

A. Leadership

The organizational structure for the Construction Engineering program is shown in the Figures 1-1 thru 1-4 in the Background Information chapter, Section D at the beginning of this report. Construction Engineering is one of three undergraduate programs in the Department of Engineering & Technology. The direct reporting structure flows from the University President to the Provost, to the Dean of the College of Science, Engineering, & Agriculture, to the Department Head. The current leadership is supportive and committed to the ongoing success of the Construction Engineering program as well as the Department of Engineering & Technology as evidenced by the following:

1. Departmental Shift Towards Engineering

   The department has not left its roots in technology but a shift towards engineering is evident when the undergraduate programs in the department are studied. Figure 8-1 shows a graphical comparison of the programs in 2000 and 2013.

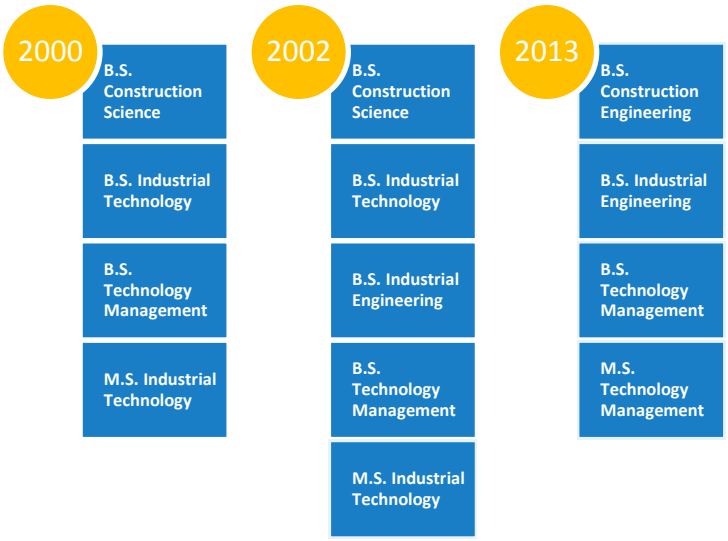


Figure 8-1: Department of Engineering & Technology Undergraduate Program Comparison

2. College of Science, Engineering, & Agriculture

   The formation of two new colleges was approved for Texas A&M University-Commerce by the Texas A&M University-System Board of Regents and the Texas Higher Education Coordinating Board. One of the new colleges is the College of Science, Engineering, and Agriculture. The Department of Engineering & Technology became a part of the College of Science, Engineering, and Agriculture, effective June 1, 2011. Prior to the formation of the new college, the Department of Engineering & Technology was under the College of Business & Technology. This reorganization aligns the science, technology,

engineering, and mathematics (STEM) programs, which will significantly improve communications and meaningful interactions between the departments. The formation of the new college shows the continued commitment of the university to engineering and the other STEM disciplines. The reorganization did not involve a reduction in faculty lines or budget for the department.

B. Program Budget and Financial Support

Higher education is experiencing a financial crisis of unprecedented proportions. Although not as severe as other states, higher education institutions in Texas have experienced significant budget cuts. The faculty lines in the department have increased by three, including two new construction engineering faculty lines.

1. Budget Process

The budget development process is initiated by establishing a baseline budget by rolling forward the recurring funds. Departments submit requests and justification for proposed budget adjustments, which includes new faculty lines, graduate assistants, increased adjuncts, increased operational funds, and other related items to the college dean. The baseline budgets and budget proposals are taken to the Budget Review and Development Council (BRDC). The BRDC builds upon the strategic planning process by linking consensus-based goals to the university budget. Members of the Council represent academic, business, and student service units across the university. The Council engage in a variety of activities that consider; 1) overall objectives of the process, 2) expectations of stakeholders, 3) external fiscal environment, 4) internal budget processes, 5) funding sources, 6) mandated expenditures, 7) salary plan, 8) budget assumptions, 9) possible fee increases, 10) possible new fees, and 11) possible tuition increases. The Council's work culminates with the submission of a recommended budget to the president, which will provide the basis for subsequent development of detailed budgets at the unit level.

The 2012-2013 operational budget for the Construction Engineering program, including departmental support is shown in Table 8-1.

Table 8-1: Construction Engineering Operational Budget

Line Item	2012-2013
Department*	
Operating costs	$38,571
Lab supplies	$2,107
Construction Engineering program	
Operating costs	$24,760
Total	**$65,438**

**Department budget supports all four programs in the department*

2. Instructional Support

The university award three types of graduate assistantships, including a graduate teaching assistant (GAT). Teaching assistants must teach courses in the department in which they are assigned. Teaching assistants are teachers of record. To qualify for a teaching assistantship, the student must have earned a minimum of 18 graduate hours in the discipline they are teaching. Due to the fact the engineering program currently does not have a graduate degree there are no qualified students to teach in the Construction Engineering program. At this time the program or department does not employ any teaching assistants.

The institution provides limited teaching workshops. Primarily, the workshops that are offered are focused on distance learning, which has limited benefit to the program faculty since minimal CONE program courses are taught online. Faculty seeking workshops on best practices in teaching do so through external events, such as an American Society for Engineering Educators conferences.

3. Other Funding Sources

As described in Criterion 7, Section D, the primary sources of funding for maintaining and upgrading tools, equipment, and computing resources have been 1) construction engineering operational budget 2) course fees, 3) special item funding, and 4) the Higher Education Assistance Fund (HEAF). The department recognizes the need for developing other sources of revenue and funding to supplement existing sources.

a. Course Fees

The university establishes a course fee structure for each college. Revenue generated from course fees typically fund software, consumables, and other materials for the engineering courses and laboratories. These funds are allocated at the college level and departments submit proposals/requests to the dean to access them.

b. Grants

External grants are a source of funding universities are emphasizing and becoming more reliant upon. The department has had limited success in external funding to date, due in large part to the lack of a graduate program. Without graduate students, it is difficult to demonstrate an infrastructure that can support the large research grants, which allow the purchase of capital equipment and computing resources. While continuing to explore opportunities for the large agency grants, the department has adopted the strategy of seeking out smaller grants as a means of building the necessary infrastructure. These sources include local and state funding agencies. Examples of recent grants that have enhanced or added resources to the program include:

Engineering Recruitment Program – Engineering Summer Programs, THECB Award Number: 05638, Texas Higher Education Coordinating Board, $20,000. Engineering Summer camp. (2011)

Engineering Recruitment Program – Engineering Summer Programs, 003565-ER10-0000, Texas Higher Education Coordinating Board, $18,000. Engineering Summer camp. (2010)

Engineering Recruitment Program – Engineering Summer Programs, 003565-ERP09-0000, Texas Higher Education Coordinating Board, $11,111. Engineering Summer camp. (2009)

TEXO Education and Research Foundation 2011 Construction Department Grant, TEXO: The Construction Association, $5,000. Upgrades to department computers to support BIM software.

TEXO Education and Research Foundation 2010 Construction Department Grant, TEXO: The Construction Association, $2,000. Computer equipment and professional development for the A&M-Commerce Student Construction Association (SCA).

c. Non-Grant Funding

Strategy 1.4, under the university's guiding principle Stewardship, is to increase non-grant funding from external sources. The department is actively seeking these sources through partnerships with local industry and community organizations. Recent examples of non-grant funding that have benefited the department include:

Software Donations. More than $600,000 worth of BIM software was donated in 2012 from various companies to support the BIM initiative within the Construction Engineering program.

Endowed Department Scholarships. The Department of Engineering & Technology has nine endowed scholarships, which are used to recruit and retain engineering and technology students. There were 29 department scholarships awarded in Fall 2012 totaling $20.525. Thirteen (13) of the awards went to Construction Engineering students, 9 to Industrial Engineering students, and 7 to Technology Management students.

Lion's Pride BEST Robotics. The Department of Engineering & Technology are a hub for the non-profit Best robotics program. High school and middle school teams compete in a six week competition during the Fall semester. This is a key part of the department strategy to educate and provide career awareness to the STEM fields. Private, industry, and educational donations totaled over $27,000 for 2012. These funds covered the expenses of 29 teams.

4. **Resource Adequacy**

The resources are adequate to support the program and the attainment of the student outcomes. For example:

- Maintained department budget in an environment of state budget cuts to higher education
- Formation of a new college without reduction of faculty lines or budget
- Higher course fees under the new STEM college
- Newly established engineering laboratories to support instruction
- Equipment upgrades in CONE laboratories
- Increased instructional software through donations and operational budgets

C. Staffing

The 2012-2013 Department of Engineering & Technology faculty and staff includes:

- Department head* (50% teaching load)
- Department secretary*
- Student worker*
- Graduate assistants (2)
- Engineering mentor / transfer liaison* (recruitment & outreach)
- Safety officer / Instructor* (75% teaching load)
- Construction Engineering faculty (3)
- Industrial Engineering faculty (3)
- Technology Management faculty (3)

** Staff supporting all of the departmental programs. As programs grow, additional staff will be required to maintain the same level of service.*

The university requires employees to complete training on certain topics to comply with Federal, State, Texas A&M System, and A&M-University laws, policies, regulations, rules, and procedures.

D. Faculty Hiring and Retention

Texas A&M University-Commerce has established a set of guiding principles or imperatives to achieve the university mission. The first guiding principle is Diversity.

> *Foster a culture of inclusion which **attracts to our university highly qualified** students, **faculty, and staff** who represent the diversity of the region we serve, and who will engage with us in the pursuit of our university's vision and mission*

1. New Faculty Hiring Process

The University has an established hiring process, which is defined in the Human Resources' *Hiring Procedures & Guidelines* document (http://www.tamuc.edu/facultyStaffServices/humanResources/employment/HiringProcedures/default.aspx). The general hiring process is shown graphically in Figure 8-2. For faculty positions, a national search is conducted.

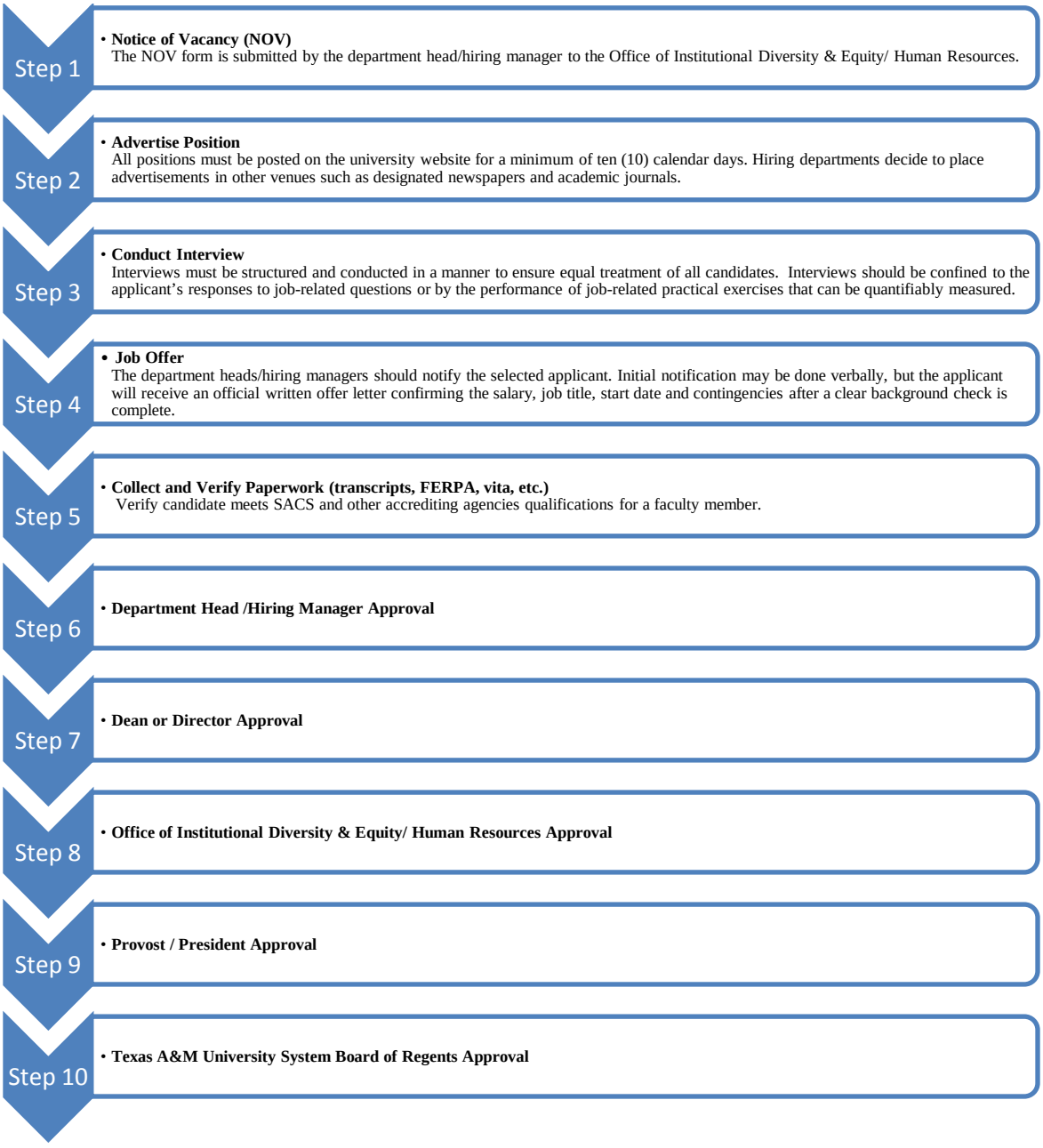


Figure 8-2: A&M-Commerce New Faculty Hiring Process

2. Strategies to Retain Qualified Faculty

The following strategies are employed to recruit and retain qualified faculty:

- Benefits available through the Texas A&M University-System
- Texas A&M University-System offers tenure and professional faculty tracks
- Texas A&M University-System has a monetary reward system for teaching excellence
- Competitive salaries with other Construction Engineering programs in the nation
- Formation of the new STEM college (College of Science, Engineering & Agriculture) provides synergistic opportunities with other STEM departments
- New engineering facilities (construction engineering laboratories)
- Opportunity for professional growth beyond traditional teaching and scholarly activities due to the young age of the program
- Unique consulting opportunities

E. Support of Faculty Professional Development

To date, adequate resources have been available to support requested faculty development. Examples of recent professional development activities include, but are not limited to:

- American Society for Engineering Education (ASEE) Gulf-Southwest Annual Conference
- American Society for Engineering Education (ASEE) Annual Conference & Exposition
- ABET Commission Summit
- ABET Accreditation Workshops
- Texas Engineering Experiment Station NSF Grant Writing Workshop
- AutoCAD University
- Synchro Users Group Annual Meeting

Faculty submit travel requests to the Department Head. Department Head reviews and approves activities from available funds.

APPENDICES

Appendix A – Course Syllabi

On October 29, 2009, the Texas Higher Education Coordinating Board adopted Chapter 4, Subchapter N, Sections 4.225-4.229, concerning Public Access to Course Information, required by House Bill 2504, 81st Texas Legislature. Texas Education Code § 51.974 authorizes the Texas Higher Education Coordinating Board to adopt the following rule.

> *For each undergraduate classroom course offered for credit by the institution, a syllabus and a curriculum vita for the instructor of record must be made available to the public on the institution's internet web site.*

Syllabi can be accessed from the Texas A&M University-Commerce home page by selecting Schedule of Classes. Each course listed includes links to the, syllabus, instructor CV, and textbooks. Institutional guidelines for course syllabi are defined in the Texas A&M University-Commerce Rules & Procedures *12.01.99.R0.05 Guidelines for Content and Distribution of Syllabi: Roles and Responsibilities of Faculty.*

Appendix B – Faculty Vitae

Current curriculum vitae are provided for the individuals listed in Table 6-1, Faculty Qualifications.

Construction Engineering Faculty

- Ilseok "Eddie" Oh
- Nilo Tsung
- Gregory Wilson

Industrial Engineering Faculty

- Pelin Altintas-de Leon
- Wen-Hsing Liu (ad interim appointment, Spring 2013)

Technology Management Instructor (required freshman-level industrial technology courses)

- Perry Moler

Ilseok "EDDIE" Oh, Ph.D.

EDUCATION

Doctor of Philosophy, Civil Engineering (Geotechnical/Materials Engineering), 2003
Iowa State University of Science and Technology, Ames, Iowa

Master of Science, Civil Engineering (Geotechnical Engineering), 2001
Iowa State University of Science and Technology, Ames, Iowa

Bachelor of Science, Civil Engineering (Emphasis in Geotechnical Engineering), 1998.
Hanyang University, Seoul, South Korea

ACADEMIC EXPERIENCE

Texas A & M University – Commerce, Commerce, Texas (August 2012 ~ present)
Associate Professor, Construction Engineering

Southern Polytechnic State University, Marietta, Georgia (August 2006 ~ May 2012)
Associate Professor, Civil and Construction Engineering
Program Director, Civil and Construction Engineering
Director, Georgia Pavement Research Center

Assistant Professor, Civil Engineering Technology (August 2006~April 2008)
Instructor, Continuing Education Engineering Courses, Extended University

State University of New York at Alfred, Alfred, New York (August 2003~May 2006)
Assistant Professor, Civil Engineering Technology Department
Lead Examiner, New York State Hot-Mix Asphalt QC/QA Technician Certification
Lead Examiner, New York State Hot-Mix Asphalt Density Testing Inspector Certification

Iowa State University, Ames, IA (August 1999 ~ May 2003)
Teaching & Research Assistant

NON-ACADEMIC EXPERIENCE

Hayward Bakers Inc., Santa Paula, CA (May 2000 ~ August 2000)
Project Engineer on site

Denver-Korea Inc., Seoul, Korea (December 1997 ~ July 1999)
Project Engineer & Project Manager

Hanyang University, Seoul, Korea (January 1998 ~ August 1998)
Teaching & Research Assistant

PROFESSIONAL AFFILIATIONS / MEMBERSHIPS

- Association of Asphalt Paving Technologists (AAPT)
- International Society of Asphalt Pavements (ISAP)
- American Society of Civil Engineers (ASCE)
- Geo-Institute of the American Society of Civil Engineers
- University Transportation Research Consortium (UTRC)

- Korean Geotechnical Engineering Institute
- Korean Civil Engineering Institute
- Korean American University Professors Association (KAUPA)

SERVICE TO PROFESSION

Editorial Board member – Journal of Civil Engineering Research (2011 ~)

Paper Reviewer – ASCE Journal of Materials in Civil Engineering (2007 ~)
ETD session, ASEE Annual Conference (2007, 2009)
Journal of Engineering Technology (2007 ~)

Department of Engineering & Technology Tenure and Promotion Committee

PUBLICATIONS AND PRESENTATIONS

Ilseok Oh and Sunny Kim, "Determination of Coefficient of Thermal Expansion for Portland Cement Concrete (PCC) Pavements for MEPDG Implementation", Research Report, GDOT PR 10-04, October 2012

Ilseok Oh and Wasim Barham, "The Application of Artificial Neural Network for the Prediction of the Deformation Performance of Hot-Mix Asphalt", Proceedings of 2011 ASCE International Workshops on Computing in Civil Engineering, June 19 – 22, 2011, Miami, Florida

Simin Nasseri, Mohammad Jonaidi, and Ilseok Oh, "Efficient Teaching Methods in Engineering Mechanics Courses", The 3rd annual Polytechnic Submit, June 8 – 10, 2011, SPSU, Marietta, Georgia

Sunghee Kim, Ilseok Oh, "Performance of Constructed Facilities: Pavement Structural Evaluation of William P Hobby Airport in Houston, Texas", Korean Disaster Prevention Association, June, 2008

"The Application of Artificial Neural Network for the Prediction of the Deformation Performance of Hot-Mix Asphalt", Ilseok Oh and Wasim Barham, 2011 ASCE International Workshops on Computing in Civil Engineering, June 19 – 22, 2011, Miami, Florida

"Applications of Engineering Geology in Civil Engineering", Invited Lecture, Chosun University, Kwang-Joo, Korea, May 13th, 2011

PROFESSIONAL DEVELOPMENT ACTIVITIES

FARO 3D Laser Scanner Training, Commerce, TX, August 13 – 15, 2012

FARO Cloud Software Training, Commerce, TX, September 21, 2012

"Updates in Construction Engineering Tools", Rogers-O'Brien, Dallas, TX, October 12, 2012

2012 ASC/TEXO Region V Educators Conference, Dallas, Texas, October 18 -19, 2012

Nilo Tsung, CEng, PE, PhD, M.ASCE

EDUCATION

2010 ***PhD*** in Civil Engineering (Civil Systems), University of Colorado Boulder

1999 ***MS*** in Computer Science, University of Colorado Boulder

1984 ***MS*** in Civil Engineering (Geotechnical Engineering), University of Colorado Boulder

1980 ***BS*** in Construction Engineering, Taiwan National University of Science and Technology

ACADEMIC EXPERIENCE

2012-present ***Assistant Professor***, Department of Engineering & Technology, Texas A&M University – Commerce

2010-2012 ***Postdoctoral Researcher***, Department of Civil Engineering, University of Colorado Boulder

1994-2010 ***Graduate Assistant***, Department of Civil Engineering (Civil Systems), University of Colorado Boulder

NON-ACADEMIC EXPERIENCE

1991-1994 ***Structural Engineer*** (soil-structure interaction), PB/MK Team, Superconducting Super Collider project, Dallas, Texas

- Calibrated constitutive models of soils and concrete tunnel liners with finite-element codes based on field data measured from sensors installed around an experimental shaft/tunnel before, during, and after its excavation.
- Designed retaining walls around underground colliding hall and slab supporting collider based on calibrated models.
- Helped save $15 million by performing value engineering studies to challenge requirements that added little to project.

1990-1991 ***Software Engineer***, DSC Communications Corporation, Plano, Texas

- Analyzed, designed, programed, tested and documented a few subsystems of CMS systems on fault-tolerant computers.

1986-1989 ***Geotechnical Engineer***, TK Engineering Corporation, Alhambra, California

- Conducted site reconnaissance and subsurface exploration, directed soils and rock testing programs, analyzed laboratory and field testing data, designed foundations and earthworks for proposed facilities, and prepared geotechnical reports.
- Conducted seepage analysis and static/dynamic stability analyses for embankment dams in seismically active areas.

- Performed forensic investigations on distressed cases caused by earthquakes, landslides, bad design, poor construction, etc.

1984-1986 ***Project Engineer***, **Taiwan Expressway Bureau**, Taizhong, Taiwan

- Estimated costs, formulated schedules, solicited bidders, conducted bid analysis, approved contractor submittals.
- Collected and analyzed project progress data, wrote weekly progress reports including probable causes for activities with poor performances, and followed up suggestions adopted by management to ensure contractors improved performance.
- Conducted unit cost analysis for change order requests based on productivity data collected from the construction site or elsewhere, suggested fair prices to construction manager, and helped negotiate new contracts with contractors.

CERTIFICATIONS AND PROFESSIONAL REGISTRATIONS

- ASCE certification in fundamentals of sustainable engineering
- Registered professional engineer (PE) in civil engineering in California (registration No. C 52874)
- Registered professional engineer (PE) in civil engineering in Colorado (registration No. 26807)
- Registered chartered engineer (CEng) in civil engineering in Taiwan (registration No. 3807)

SERVICE

Student Construction Association Faculty Advisor

Department of Engineering & Technology Scholarship Committee

PUBLICATIONS AND PRESENTATIONS

- **Tsung,** N., Corotis, R., Chinowsky, P., and Amadei, B. 2010. "A Systems Approach to Assessing the Sustainability of the Grand Canal of China." In *Proceedings of 5th Intl. Conference on Bridge Maintenance, Safety and Mgmt., ISBN 978-0-415-87786-2*, edited by D. Frangopol, R. Sause, and C. Kusko, July 1, 2010, Philadelphia, PA, pp. 1269-1276.
- **Tsung,** N., Corotis, R., Chinowsky, P., and Amadei. B. "A Retrospective Approach to Assessing the Sustainability of the Grand Canal of China." *International Journal of Structure and Infrastructure Engineering: Maintenance, Management, and Life-Cycle Design and Performance.* Vol.9, No. 4, April 2013, 297-316.
- "A systems approach to assessing the sustainability of the Grand Canal of China", Fifth International Conference on Bride Maintenance, Safety and Management, Philadelphia, PA, July 2010.

Gregory P. Wilson, Ph.D., P.E., M.ASCE

EDUCATION

Ph.D. Civil Engineering (Geotechnical). Arizona State University. **(1992)**

M.S. Civil Engineering (Geotechnical). Arizona State University. **(1982)**

B.S. Construction Management (Heavy Methods). Arizona State University. **(1972)**

ACADEMIC EXPERIENCE

Texas A & M University-Commerce, Commerce, TX. Assistant Professor, professional track. Department of Industrial Engineering and Technology. **(2006 –Present)**

Texas A & M University-Commerce, Irving, TX. Adjunct, Undergraduate Faculty. Department of Industrial Engineering and Technology. **(2005 –2006)**

Southern Methodist University, Dallas, TX. Adjunct, Graduate Faculty. Department of Civil and Environmental Engineering. **(2003 –2005)**

University of Texas Arlington, Arlington, TX. Adjunct, Undergraduate Faculty. Department of Civil and Environmental Engineering. **(2002)**

University of Louisiana at Monroe, Monroe, LA. Tenured, Professor and Contractors' Educational Trust Fund Professor, Director, School of Construction. **(1996 –2000)**

Louisiana State University, Baton Rouge, LA. Tenured, Professor and Contractors' Educational Trust Fund Professor, School of Building Construction. **(1992 –1996)**

Arizona State University, Tempe, AZ. Untenured, Assistant Professor. Del E. Web School of Construction. **(1977 –1992)**

ENGINEERING AND CONSTRUCTION EXPERIENCE

Wilson Geotechnical Group, LLC. Geotechnical and Civil/Structural Consulting Engineering. (2001 –Present)

Halliburton, Inc. Providing geotechnical engineering support for on-site stability analysis of oil exploration equipment. (2011)

Harrison, Harper, Walker, Inc. Paris, TX. Geotechnical and civil engineering consultant. Performing design and analysis for structural steel fabrication, geotechnical projects, and formwork design as necessary. (2005 –Present)

Ericcson, Inc. Plano, TX. Network build project manager (2004 –2005)

MacTEC Engineering and Consulting, Inc. Fort Worth, TX. Branch Office Manager and Senior Geotechnical Engineer. (2003 –2004)

PSI, Professional Services Industries, Inc. Fort Worth, TX. Branch Manager and DFW District Manager. (2002-2003)

SpectraSite Broadcast Group, Irving, TX. Structural and geotechnical engineer. (2001-2002)

Construction Consulting Services, Inc., Baton Rouge, LA. Self-employed consulting civil engineer. (1984 –1992)

Forte and Tablada, Inc. Baton Rouge, LA. Senior Structural Engineer. (1996)

Soils and Foundation Engineers, **Inc**. Baton Rouge, LA. Geotechnical Engineer. (1992 – 1996)

Tierra West Contracting, **Inc**.,Tempe, AZ., Project Manager and field superintendent. (1981 –1982)

Salt River Project Public Utility Commission, Tempe, AZ. Senior Cost Engineer. (1976-1977)

Bechtel Power Corporation, Los Angeles Power Division, Norwalk, CA. Construction Field Engineer (1972 –1976)

PROFESSIONAL APPOINTMENTS

Arizona Board of Technical Registration, Phoenix, AZ., Member, Civil Engineering Enforcement Committee.

Registered Professional Civil Engineer. Texas, Arizona, and Oklahoma.

PROFESSIONAL AFFILIATIONS

American Society of Civil Engineers (Member Status)

National Society of Professional Engineers

Sigma Lambda Chi (National Construction Scholastic Honorary)

Chi Epsilon (National Civil Engineering Scholastic Honorary)

Associated Schools of Construction, ASC

American Counsel for Construction Education (Accreditation Team Member)

American Society of Civil Engineers, Dallas and Fort Worth Chapters

America Society of Military Engineers, Fort Worth and Dallas

COMMITTEE ASSIGNMENTS AND UNIVERSITY SERVICE

Strategic Planning Committee, College of Business and Technology

Scholarship Committee, Department of Engineering & Technology.

Faculty Search Committees, Department of Engineering & Technology

Mission Statement Committee, College of Science, Engineering, & Agriculture

RESEARCH AND SCHOLARLY ENDEAVORS

"The Behavior of a Deep Retained Excavation in Soft San Francisco Bay Mud. A Case Study. American Society of Civil Engineers, Geotechnical Conference. GEO-FLORIDA-2010. Selected for publication and presentation, February 20-24, 2010.

"The Behavior of a Deep Retained Excavation in Soft San Francisco Bay Mud. A Case Study. Associated Schools of Construction Proceedings, 45th. Annual Conference. University of Gainsville. April 1-4, 2009. Pg. 624.

"The Effects of Construction Sequencing and Equipment Selection on Measured Strut Loads for a Deep Retained Excavation." Associated Schools of Construction Proceedings, 45th. Annual Conference. University of Gainsville. April 1-4, 2009. Pg. 628.

PELIN ALTINTAS-DELEON, Ph.D.

EDUCATION

Ph.D. in Systems and Engineering Management (Under Industrial Engineering Department)
Texas Tech University, 2010

M.S. in Industrial Engineering
Texas Tech University, 2003

B.S. in Industrial Engineering
Dokuz Eylül University, 1998

ACADEMIC EXPERIENCE

Fall 2011 – Present	Assistant Professor Texas A&M University-Commerce, Commerce, Texas
Spring 2011	Ad-Interim Assistant Professor Texas A&M University-Commerce, Commerce, Texas
2004 – 2007	Teaching Assistant/Research Assistant Texas Tech University, Lubbock, Texas

Professional Experience

2002-2011 Texas Tech University-Fiber Biopolymer Research Institute
Running experiments, collecting and analyzing data, writing journal articles and conference papers. Assisted on the process of Lab-Spinning machine update (updating operating system to visual basic programming).

1999-2000 Aydinel Tekstil (Apparel Manufacturing Plant in Turkey)
Industrial Engineer. Assembly line balancing. Production scheduling and control. Process flow diagrams.

1998-1999 Roteks Tekstil (Apparel Manufacturing Plant in Turkey)
Student senior project. Assembly line balancing. Time studies. Production and capacity planning. Load schedules. Process flow diagrams. Project scheduling-CPM.

1996 (Summer Intern) RAKS (House Appliances Manufacturing Plant in Turkey)
Assisted at the Production Planning Department; preparing daily production forecasts and quality control charts.

1995 (Summer Intern) OPEL (German Automobile Manufacturing Plant in Turkey)
Analyzing the production system (JIT/KANBAN); preparing process flow diagrams and reports on performance measurements, inventory management (MRP-I), quality control, and resource planning (MRP-II).

Professional Memberships

Toastmaster International
Alpha Pi Mu (Industrial Engineering Honor Society)
Tau Beta Pi (Engineering Honor Society)
Institute of Industrial Engineers

Service

Industrial Engineering faculty advisor
Alpha Pi Mu TAMU-Commerce faculty advisor
College mission statement committee member
College curriculum committee member
Grade appeal committee member
Faculty development leave committee member
Volunteer for MANE Event, Lion's Pride Best robotics, ISD Engineering days

PUBLICATIONS

"The Concept of a Regional Maintenance Center," Journal of Public Transportation, vol. 12, no. 3, 2009, pp. 105-118. (M.G. Beruvides, J.L. Simonton, N.M. Waters, E.H. Ng, S. Chaivichitmalakul, C.C. Chiu-Wei, P.Z. Altintas, P.T. Nash, P. Monn).

"Pilot Study to Examine the Relationship between AFIS Fiber Properties and White Speck Occurrence," Journal of Cotton Science, 11:3 110-118, 2007 (P.Z. Altintas, J.L. Simonton, M.G. Beruvides).

"Expert and Novice Operator Comparison with Scanner-based Image Analysis for White Speck Detection on Dyed Yarn," Journal of Cotton Science, 9:215-222, 2005 (J.L. Simonton, M.G. Beruvides, P.Z. Altintas, and K. Kang).

"A New Approach to Measuring Cotton Spinnability Limits," Accepted for publication in Proceedings of the Beltwide Cotton Conferences, CD-ROM, National Cotton Council of America, Nashville, 2008, 7p. (Altintas, P.Z., M. Krifa, and M.G. Beruvides).

"Cost of Quality Analysis of Cotton Fiber to Fabric Systems," ASEM Annual Conference Proceedings, CD-ROM, Nashville, TN, 2007, (P. Altintas, M.G. Beruvides and J.L. Simonton).

"Preliminary study examining a systemic approach to recycling water and biomass for rural economic development," ICASALS Conference Proceedings, CD-ROM, Lubbock, Texas, 2006, (J.L. Hanson, P.Z. Altintas, L.A. Barroso, M.G. Beruvides, C.B. Fedler, and J.L. Simonton).

"Multi-Scenario Case Study of a Fuel Pellet Manufacturing Operation Utilizing Cotton Waste," Proceedings of the Beltwide Cotton Conference, 2004 (G. Holt, J.L. Simonton, A. Canto, D. Chui, P. Altintas, A.S. Sandoval, and M.G. Beruvides).

"Effect of Textile Treatments on White Speck Counts in Dyed Yarns," Proceedings of the Beltwide Cotton Conference, 2003 (J.L. Simonton, M.G. Beruvides, P.Z. Altintas, and K. Kang).

Wen-Hsing Liu

EDUCATION

Texas Tech University, Lubbock, TX, 2007 – May 2012
Ph.D. in Industrial Engineering
Minor: Business Statistics, Area of Information Systems and Quantitative Sciences

Pennsylvania State University, State College, PA, 2005 - 2007
Ph.D. Student in Industrial and Manufacturing Engineering

West Virginia University, Morgantown, WV, 2002 - 2005
M.S in Industrial and Management Systems Engineering

Chung Yuan Christian University, Chung-Li, Taiwan, 1994 - 1998
B.S. in Industrial Engineering

ACADEMIC EXPERIENCE

Ad-Interim Assistant Professor: Department of Engineering & Technology, Texas A&M University-Commerce, Commerce, Texas, Jan. 2013 - Present

Teaching Assistant: Department of Industrial Engineering, Texas Tech University, Jan. 2010-May 2012

Online Course Designer: The College of Outreach and Distance Education, Texas Tech University, Sep. 2009 – Dec. 2009

Postdoctoral Research: Department of Industrial Engineering, Texas Tech University, Sep.- Dec. 2012

WORK EXPERIENCE

Industrial Engineer: Gold Circuit Electronics LTD. Chung-Li, Taiwan, 1999 – 2001
- Improved the production lines to increase efficiency and productivity
- Used AutoCAD to plan the layout in the factory
- Set up the standard time and production capacity

Internship: X-fab semiconductor manufacturer, Lubbock, Texas**,** Feb. – May 2008
- Applied lean tools to reduce the production cycle time
- Simulated the product flow to determine the optimal setting
- Helped in the transformation to the lean manufacturing

PROFESSIONAL CERTIFICATIONS

Six Sigma Yellow Belt certificate

AWARDS AND HONORS

Highly Commended Award of the 2012 Emerald/EFMD Outstanding Doctoral Research Awards, Emerald Group Publishing Limited, 2012

Summer Dissertation/Thesis Research Award, Texas Tech University, 2011

Merl Baker Student Best Paper Award, 3rd place, American Society for Engineering Management Conference, 2010

UNIVERSITY AND PROFESSIONAL SERVICE

Student Volunteer: 2011 American Society for Engineering Management Conference, Lubbock, TX

PUBLICATIONS AND PRESENTATIONS

Glover, W. J., **Liu, W.**, Farris, J. A., & Van Aken, E. M. (accepted). Characteristics of Established Kaizen Event Programs: An Empirical Study, *International Journal of Operations and Production Management*, accepted June 2012.

McKendall, A. R., & **Liu, W. (**2012). New Tabu Search Heuristics for the Dynamic Facility Layout Problem, *International Journal of Production Research*, 50(3), pp. 867-878.

Liu, W., & Farris, J. A. (2012). The Correlations between Key Factors and Project Team Performance, *2012 International Conference of American Society for Engineering Management*, Virginia Beach, VA, October 17-20, 2012, CD-ROM.

Liu, W., & Farris, J. A. (2012). Key Factors for Improving Project Team Performance, *2012 Industrial Engineering and Research Conference*, Orlando, FL, May 19- 23 , 2012, CD-ROM. (Presentation only)

Liu, W., & Farris, J. A. (2012). Developing a Project Team Survey for Performance Evaluation, *2012 Industrial Engineering and Research Conference*, Orlando, FL, May 19- 23, 2012, CD-ROM. (Presentation only)

Liu, W., & Farris, J. A. (2011). A Comprehensive Model of Project Team Performance, *2011 International Conference of American Society for Engineering Management*, Lubbock, TX, October 19-22, 2011. (Presentation only) 5

Liu, W., & Farris, J. A. (2011). A Meta-Analysis of Key Factors of Project Team Performance, *2011 Industrial Engineering and Research Conference*, Reno, NV, May 21- 25 , 2011, CD-ROM. (Presentation only)

Liu, W., & Farris, J. A. (2010). Identifying the Relationships between Key Factors and Project Team Performance, *2010 American Society for Engineering Management*, Rogers, AR, October 13-16, 2010, CD-ROM

TEACHING WORKSHOPS ATTENDED

The 7th Annual Advancing Teaching and Learning Conference**,** Texas Tech Teaching, Learning & Professional Development Center**,** Lubbock, TX, March, 2011

Blackboard workshops, Texas Tech Teaching, Learning & Professional Development Center**,** Lubbock, TX, September and October, 2009

Perry J. Moler

Education

Texas A&M University-Commerce, Commerce, TX, 2009-Aug 2010
M.S. Technology Management

Texas A&M University-Commerce, Commerce, TX, 2002-2005
B.S. Technology Management
Graduated: Cum Laude

Hocking College, Nelsonville, OH 1999-2002
A.S. Environmental Restoration
Graduated: Highest Honors

Academic Experience

Instructor/Safety Officer (Full Time)
Texas A&M University – Commerce, Commerce, TX Aug 2011-Current

Adjunct Professor (Part Time)
Texas A&M University – Commerce, Commerce, TX Aug 2010-Aug 2011

Graduate Assistant
Texas A&M University-Commerce, Commerce, TX, 2009-Aug 2010

Non-Academic Experience

Onsite Manager/ Branch Manager (Full Time)
Solutions Staffing, Columbus, OH 2007-2009

- Job site safety meetings
- Conflict resolution management
- Act as liaison between client and staffing branch office

Maintenance Supervisor (Full Time)
ERMC Malls, Cincinnati, OH 2006-2007

- Subcontractor scheduling
- Safety training
- Blueprint reading & approval

Scheduling Engineer (Full Time)
Kiewit Offshore Services, Corpus Christi, TX 2006

- Project and personnel scheduling for oil production platform

AutoCAD Technician (Part-Time)
Industrial Consortium, Sulphur Springs, TX 2004

- AutoCAD draftsman for project drawing packages for Ocean Spray, Old Orchard Brands, and PepsiCo.

Professional Affiliations

The Association of Technology, Management, and Applied Engineering (ATMAE), March 2011-Current

Institute of Industrial Engineers (IIE), 2004-Current

Toastmasters, 2010-Current

Phi Theta Kappa Honor Society, 2000-Current

Delta Tau Delta Fraternity, 2002-Current

Service

Texas A&M University – Commerce Facilities Advisory Committee

Texas A&M University – Commerce, Technology Management Student Learning Outcomes Assessment Committee

Lion's Pride BEST Robotics Leadership Team

Assistant chapter advisor Delta Tau Delta Fraternity Epsilon Eta Chapter

Career and Technical Education Judge for Garland ISD

Honors

Texas A&M System: Spring 2012 Student Recognition Award for Teaching Excellence

Texas A&M System: Spring 2011 Student Recognition Award for Teaching Excellence

Publications and Presentations

Moler, P. (2012). Smartphone applications: Implementation into safety. *Proceedings of the 2012 Association of Technology, Management, and Applied Engineering Annual Conference.*

"Smartphone applications: Implementation into safety", Association of Technology, Management, and Applied Engineering Conference, Nashville, Tennessee, 2012.

"Developing an effective laboratory safety program for academic environments", Association of Technology, Management, and Applied Engineering Conference, Cleveland, Ohio, 2011.

"Course redesign: Involving project based learning", Texas A&M University-Commerce Graduate Symposium, Commerce, Texas 2010.

Appendix C – Equipment

The following major pieces of equipment and computing resources that are available to be used in support of instruction and research.

A. Instructional Equipment and Tools

- Band saws, table saw, drill presses, miter saws, grinders, hand tools, etc.
- Ventilation trainer
- Water flume
- Modular flow channel
- Triaxial shear
- Mechanical shaker
- Sand cone density test system
- ELE soil analysis system
- Compression tester
- Tensile tester
- Hardness tester
- Beam analysis trainer
- Concrete coring machine
- Concrete mixers
- Total stations
- 3D Faro laser scanner
- Uprint rapid prototyping machine (2)
- Bridgeport EZ TRAK mill
- Bridgeport EZ PATH lathe
- Bridgeport HTC-8 Turning Center

B. Instructional Software

- SolidWorks
- AutoCAD
- Minitab
- Revit
- Synchro
- Innovia
- Microsoft Office Applications

C. Systems Engineering Lab (undergraduate research & industry sponsored projects)

- Computers & printers
- Adobe Acrobat Professional
- Adobe Dreamweaver
- Arena (Process simulation)
- AutoCAD (CAD)
- Camtasia (Video and audio recorder/editing software)
- ExtendSim Suite (Process simulation)
- Minitab (Statistical and process management)
- Risk Solver Premium (Linear programming)
- SAS Analytics (Predictive & descriptive modeling)
- Microsoft Office

Appendix D – Institutional Summary

1. The Institution

a) Name and address of the institution

Texas A&M University-Commerce
P.O. Box 3011
Commerce, Texas 75429

b) Name and title of the chief executive officer of the institution

Dr. Dan Jones
President & Chief Executive Officer

c) Name and title of the person submitting the self-study report

Dr. Brent Donham
Department Head & Associate Professor
Department of Engineering & Technology

d) Name the organizations by which the institution is now accredited and the dates of the initial and most recent accreditation evaluations.

Commission on Colleges of the Southern Association of Colleges and Schools
(1866 Southern Lane, Decatur, Georgia 30033-4097; Telephone 404-679-4501)
To award bachelor's, master's, and doctoral degrees.
Accreditation: 2003
Next Accreditation Visit: 2014

The Engineering Accreditation Commission of ABET
111 Market Place, Suite 1050
Baltimore, MD 21202-4012
Telephone: (410) 347-7700
Initial Accreditation: 2005
Next Accreditation Visit: 2017

The Association to Advance Collegiate Schools
of Business - AACSB International
Initial Accreditation: 1976
Last Accreditation: 2009

State Board for Educator Certification
Last Accreditation: 2007

The National Association of Schools of Music
Initial Accreditation: 1969
Next Accreditation: 2015

The Council on Social Work Education
Initial Accreditation: Bachelor's 1978 Master's 2001
Next Accreditation: Bachelor's 2017 Master's 2017

American Chemical Society,

Council for Accreditation of Counseling and Related Educational Programs,
Accreditation: 1991

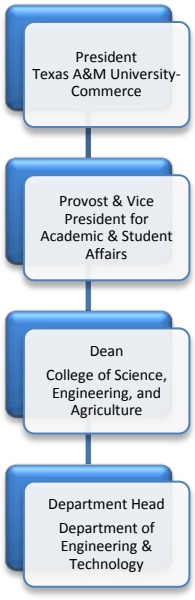
Masters in Psychology Accreditation Council
Initial Accreditation: 1998
Last Accreditation: 2008

2. Type of Control

Texas A&M University-Commerce is public institution that was established in 1889. It is the fifth oldest state university. A&M-Commerce has been a member of the Texas A&M University-System since 1996.

3. Educational Unit

The administrative chain of responsibility for the Construction Engineering program is shown in Figure D-1.



Dr. Dan Jones
President & Chief Executive Officer

Dr. Gary Peer
Interim Provost & Vice President for Academic Affairs

Dr. Grady Price Blount
Dean
College of Science, Engineering, & Agriculture

Dr. Brent Donham
Department Head & Associate Professor
Department of Engineering & Technology

Figure D-1: Construction Engineering Administrative Structure

4. Academic Support Units

Chemistry Department
Dr. Ben Jang
Department Head & Professor

Mathematics Department
Dr. Tingxiu Wang
Department Head & Professor

Physics Department
Dr. Matt Wood
Department Head & Professor

University College
Dr. Ricky Dobbs
Dean

5. Non-academic Support Units

Writing Center (tutoring)
Dr. Tabetha Adkins
Director

Math Lab (tutoring)
Math Department
Dr. Tingxiu, Department Head

Technology Services
Tim Murphy
CIO

Student Access &Success (registrar and admissions)
Dr. Mary Hendrix
Vice President

Faculty Center for Teaching with Technologies
Julie McElhany
Director

Institutional Advancement
Randy VanDeven, PE
Vice President

James G. Gee Library
Gregory A. Mitchell
Director of Libraries

Training and Development
Tammi Thompson
Executive Director

Counseling Center
Dr. Linda Clinton
Director

Career Development
Tina Boitnott
Director

International Student Services
John Jones
Director

Honors College
Dr. Ray Green
Dean

6. Credit Unit

Texas A&M University-Commerce uses the semester system. One semester credit hour equates to one lecture hour or 2-3 laboratory hours per week. The academic year includes two long semesters (Fall, Spring), an August mini, a winter mini, a May mini, and two summer semesters. Construction Engineering courses are only offered during the 15-week long semesters.

7. Program Enrollment and Personnel

The Construction Engineering program application was developed and submitted to the Texas A&M University System offices and Board of Regents in 2009. New programs are required to provide evidence of demand and sustainability. One measure is to project the number of majors to demonstrate sustainability of the program. The Construction Engineering program has achieved the projected goals through the third year, which is shown graphically in Figure D-1.

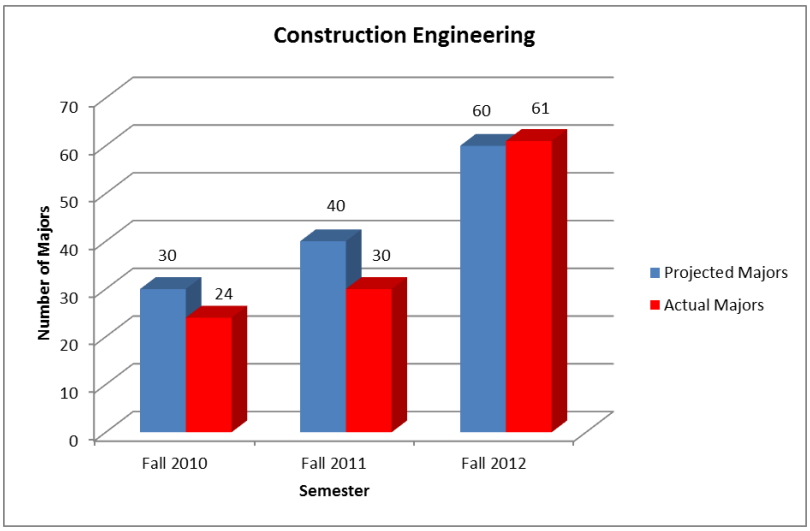


Figure D-1: Comparison of Projected and Actual Construction Engineering Majors

The Construction Engineering program was approved and implemented in Fall 2010. The first degrees will be awarded in May 2013.

The Fall 2012 program personnel are shown in Table D-1.

Table D-1. Fall 2012 Construction Engineering Personnel

	HEAD COUNT[1]		
	FT	PT	FTE[2]
Administrative[3] (Dept. Head)	1	0	0.25*
Faculty (tenure-track)	2	0	2.00
Other Faculty (excluding student Assistants)	2	0	1.75
Student Teaching Assistants	0	0	0.00
Student Research Assistants	0	1	1.00
Technicians/Specialists	0	0	0.00
Office/Clerical Employees	1	0	0.25
Others[4] (Adjuncts)	0	0	0.00

**Department head administers four programs. 0.25 FTE represents the portion for Construction Engineering*

[1]Data on this table should be for the fall term immediately preceding the visit. Updated tables for the fall term when the ABET team is visiting are to be prepared and presented to the team when they arrive.

[2]For student teaching assistants, 1 FTE equals 20 hours per week of work (or service). For undergraduate and graduate students, 1 FTE equals 15 semester credit-hours (or 24 quarter credit-hours) per term of institutional course work, meaning all courses — science, humanities and social sciences, etc. For faculty members, 1 FTE equals what your institution defines as a full-time load.

[3]Persons holding joint administrative/faculty positions or other combined assignments should be allocated to each category according to the fraction of the appointment assigned to that category.

[4]Specify any other category considered appropriate, or leave blank.