



Cockrell School of Engineering
Executive and Professional Graduate Programs

Student Handbook

Academic Year 2021-2022

Master's of Science in Engineering Degrees

- Engineering Management

- Mechanical Engineering

- Electrical and Computer Engineering – concentration in Software Engineering

Graduate Certificates

- Mechanical Engineering: Controls

- Petroleum Engineering: Data Analytics

The University of Texas at Austin
Engineering Executive Education
Cockrell School of Engineering

Executive and Professional Master's of Science in Engineering

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Section I: Overview

Contact Information

Title	Name	Phone	E-mail
General Inquiries		512.232.7354	utmasters@engr.utexas.edu
Accounting Manager	Tina M. Radke	512.471.3506	execed.accounting@austin.utexas.edu
Invoicing and Billing	Barbara Heine	512.471.3506	execed.accounting@austin.utexas.edu
UT Financial Aid	<i>Main Line</i>	512.475.6282	olivia.angel@austin.utexas.edu

Mailing Address:

UT Austin – Texas Engineering Executive Education
Attn: Executive Engineering Master's Program
210 E. 24th Street, GLT 4.106
Austin, TX 78712

Physical Address:

GLT 4.106
210 E. 24th Street
Austin, TX 78712

Fax Number:

Attn: Executive Engineering Master's Program, 512.471.0831

Helpful Student Information

Registration: Each October and March in advance of the registration period, students will be surveyed regarding course selection for the upcoming semester. TxEEE staff will then register students for courses during prescribed registration access periods. Invoices with tuition due dates will be sent to students. It is the student's responsibility to double-check their tuition invoices to ensure they were registered appropriately. Students are responsible for clearing bars that prevent registration.

Late registration: In the event the Graduate Coordinator is unable to register a student during the normal registration period due to a registration bar, for not indicating registration preferences, or for any other reason not due to staff error, the student will be charged a late registration fee in addition to normal tuition as follows:

\$25.00 through the fourth class day (second class day of a summer term)

\$50.00 from the fifth through twelfth class day (third & fourth class days of a summer term)

\$200.00 after the twelfth class day (after the fourth class day of a summer term)

You MUST contact the Texas Engineering Executive Education (TxEEE) Graduate Coordinator to initiate a drop or withdrawal. Non-payment of tuition in itself is not sufficient and will result in responsibility for full amount of tuition owed.

Grade reports: TxEEE does not provide *official* grade reports. If you need an *official* grade report for employer reimbursement, you must order an official transcript through the UT Registrar's Office. Please note that official transcripts showing fall grades may not be available by the end of the calendar year. You will need to make appropriate arrangements with your employer if an official report is required for your reimbursement. TxEEE staff and UT faculty members are not able to provide you with grade reports.

To download an unofficial grade report: <https://onestop.utexas.edu/student-records/grades/>

To order an official transcript: <https://onestop.utexas.edu/student-records/transcripts-other-records/>

Class schedules and faculty information: <http://Uteng.org>

For all TxEEE accounting issues: execed.accounting@austin.utexas.edu

Tuition payment deadlines (first payment due each semester):

Fall: September 15

Spring: January 15

Summer: May 15

Address updates: It is the student's responsibility to notify TxEEE of address/email changes, via email to a graduate coordinator. Students must also update their official contact information with the University of Texas at: <http://registrar.utexas.edu/services>

Inclement Weather Advisories: Executive and Professional Master's of Science in Engineering programs will adhere to UT campus closures due to inclement weather. Check for official UT

closures at 512-232-9999, or at this link:

<http://www.utexas.edu/safety/preparedness/closures>.

Online resource links:

University of Texas at Austin home page: <http://www.utexas.edu/>

TxEEE home page: <http://UTeng.org>

Canvas: <http://canvas.utexas.edu/>

Executive and Professional Master's of Science in Engineering

Tailored for busy schedules, these two-year programs provide students the unique opportunity to pursue a master's degree from a premier institution while working full-time. Students are presented with the best the top-ranked Cockrell School of Engineering has to offer: rigorous coursework encompassing the latest advances and core fundamentals. The programs combine challenging curriculum, immediately applicable tools, and national recognition to prepare tomorrow's leaders for success.

Stackable Graduate Certificates

Transcript-recognized graduate certificate programs offer a non-degree credential for completing a structured sequence of courses designed to meet identified workforce needs and/or to provide students with skills and/or knowledge that shall be useful for their lives or careers. Staying current with fast moving technology trends and advancements is critical to career advancement and overall growth and development. Graduate Certificate programs offer a realistic glimpse of the academic experience to pursue a master's degree. Acquiring a Graduate Certificate is an easily attainable opportunity to build microcredentials, while increasing knowledge and skills. Graduate Certificate courses are taught by award-winning faculty with the Cockrell School of Engineering. Up to 18 credit hours of course work from completed Graduate Certificates can be applied to an associated Master's Degree upon application and acceptance into the degree program.

Texas Engineering Executive Education Overview

The Texas Engineering Executive Education (TxEEE) is an innovative leader in the executive education, training, and professional development industry. For over 40 years, TxEEE's commitment has remained simple: to provide education and training that makes a profound difference in people's lives and work. With more than 150 programs worldwide offered across multiple disciplines, TxEEE acts as an information bridge for the top-ranked Cockrell School of Engineering bringing individuals, organizations, and industry the best the School has to offer: cutting-edge research, solid academic reputation, industry expert support, and extensive faculty experience. The end result is relevant, diverse education opportunities that transform lives.

TxEEE Alumni Information

TxEEE Ambassador Program

If you are interested in a fun and rewarding way to impact your Texas Engineering experience, join the TxEEE Ambassador Program. You will have the opportunity to network with professionals with similar interests and corporate representatives of various industries. Word-of-mouth is the best publicity there is and we appreciate your support in helping spread the word. Students and alumni may support the programs in the following ways:

- Provide a student testimonial for our online and print media
- Represent your program at an online or onsite info session
- Arrange for an information session at your company
- Refer an applicant to the programs
- Host coffee chats and class visits with prospective students

LinkedIn Alumni Group

The Texas Engineering Executive Education manages a LinkedIn Alumni Group for our alumni. If you are already a registered user of LinkedIn, simply join our group entitled, “[Texas Engineering Executive Education](https://www.linkedin.com/groups/7065246)” <https://www.linkedin.com/groups/7065246>. Here, you can post information, start conversations, post jobs, and interact with other Alumni members. We will also post information such as Alumni Happy Hour events, our Continuing Education courses, webinars, and more.

Engineering Career Assistance Center

Students and alumni may access the services of the Cockrell School’s Engineering Career Assistance Center. Please visit their website for more information and to register: <http://www.engr.utexas.edu/ecac/>.

Social Networking

Connect with alumni, students, faculty and staff by utilizing the TxEEE social networking sites. TxEEE is on Facebook, LinkedIn, Google+, and Twitter. Visit the TxEEE website (<http://executive.engr.utexas.edu/>) for links to our social networking sites.

Section II: Program Policies

Student Responsibilities

While University faculty and staff members provide students academic advice and assistance, each student is expected to take responsibility for meeting all University requirements and deadlines. Students must abide by the academic and disciplinary policies given in the Graduate Catalog and in the General Information Catalog. These policies include rules governing quantity of work, the standard of work required to continue at The University, warning status and scholastic dismissal, and enforced withdrawal.

Students must meet the program degree requirements; must enroll in courses appropriate to the program; must meet prerequisites and take courses in the proper sequence to ensure orderly and timely progress; must seek advice about degree requirements and adhere to University policies when necessary.

Changing Your Name and Address

It is the student's responsibility to give correct local and permanent addresses, telephone numbers and e-mail address to both the Texas Engineering Executive Education (TxEEE) staff and to The University's Office of the Registrar. A student may update their local and permanent addresses and telephone numbers as well as e-mail address listings by logging in with their UT EID at: https://utdirect.utexas.edu/apps/utd/all_my_addresses/ Follow the instructions given in order to activate your UT EID.

Communications

Students are **required** to monitor **all** program communication channels – e-mail, list serves, Canvas – on a regular basis to be aware of all current issues and events pertaining to individual courses and to the program in general. You may wish to set up a TxEEE correspondence email folder to easily follow correspondence throughout the semester. Along with your name, you also have three other important identifiers for the TxEEE staff.

The UT EID is a unique identifier for each student used in lieu of a Social Security Number. Almost any question that you will need answered will require that you supply this ID, so we ask that you supply it along with your full name on **all** correspondence. Second, you have a program identifier, which is your Program of Study within your respective Executive Engineering Master's Program. Third, you have a cohort number, assigned based on your first semester enrolled in your program and shared with your fellow class members. Both your program identifier and cohort are extremely helpful to us when discussing course options, payments, and other program related issues. If you forget or are unsure of any of the identifiers, please reference a recent tuition invoice, as it is all included in the invoice number.

E-mails, Class Lists, and Canvas

E-mail: The University's e-mail policy may be found at:

<http://www.utexas.edu/cio/policies/university-electronic-mail-student-notification-policy>.

Essentially, it states The University of Texas at Austin views e-mail to be "a mechanism for official University communications to students." It is the student's responsibility to keep his/her e-mail address up to date **with both TxEEE and The University** and "e-mail returned to The University with 'User Unknown' is not an acceptable excuse for missed communication."

Students are responsible for checking their e-mail on a regular (and frequent) basis to ensure that they are receiving all important messages. Additionally, "undeliverable messages returned because of either a full inbox or use of a 'spam' filter will be considered delivered without further action required of The University."

Page 40 contains links that are important: one to sign up for your free University e-mail address and another to register your preferred e-mail address. **It is the Executive Engineering Master's Program policy to send all student correspondence (invoices, receipts, notifications, reminders, etc.) to one primary e-mail address.**

Class lists: The Executive Engineering Master's Program considers class lists an extension of the e-mail system. Each class list that you are a member of will reference your primary e-mail address and are used for courses as well as for administrative notifications and reminders.

Canvas: Canvas is an online course management system used by many instructors across The University and allows "faculty and students to communicate and collaborate through real-time chats, threaded discussions, class e-mail, and online file exchanges." Further information regarding Canvas can be found at: <http://canvas.utexas.edu/>.

Duo: In an effort to increase security, multi-factor authentication (Duo) is now required to access most online services that require a UT EID login. For more information, including FAQs on low cost and zero costs options, options that don't require wifi, and what to do if you forget or lose your device, visit: https://ut.service-now.com/sp?id=kb_article&number=KB0018240
Get help with Duo at the UT Service Desk: <https://it.utexas.edu/>

Registration Procedures

Each October and March, the Graduate Coordinator will provide you with the list of course offerings for the upcoming semester and ask for you to select your course(s) for the next semester. Please note that priority will be given to students nearing the end of their program of study. It is important that you respond to these registration e-mails and select your course offerings in the given time frame so that you will be enrolled in the courses by The University's deadline. TxEEE staff completes the registration process and confirms registration for students. Registration in executive engineering courses is limited to students enrolled in the programs.

Late Registration Fees

In the event that the Graduate Coordinator is unable to register a student during the normal registration period due to a registration bar, for not indicating registration preferences, or for any other reason not due to staff error, the student will be charged a LATE REGISTRATION FEE IN ADDITION TO NORMAL TUITION as follows:

- \$25.00 through the fourth class day (second class day of a summer term)
 - \$50.00 from the fifth through twelfth class day (third and fourth class days of a summer term)
 - \$200.00 after the twelfth class day (after the fourth class day of a summer term)
- (These class days are determined by The University's traditional semester calendar.)

Upon being late registered by TxEEE staff, it is the student's responsibility to confirm registration by 5p.m. the same day. Student registration confirmation is not required EXCEPT IN CASES REQUIRING LATE REGISTRATION. Failure to do so will result in registration being cancelled by the university.

Course Formats

The Executive Engineering Master's Programs are two-year degree programs that begin in either August (Fall Semester) or January (Spring Semester) of each year depending on the course of study.

The Engineering Management program also offers a fast-track option in which students can complete the program of work requirements in approximately 15 months.

Graduate Certificate programs are designed to be completed in one-year. Admission to these programs is also twice a year (Fall and Spring semesters) and have the same application deadlines.

Upon successful completion of all program requirements, The University of Texas at Austin confers:

- A Master of Science in Engineering (MSE) degree to graduates of the Engineering Management (ENM) program.
- A Master of Science in Engineering (MSE) to graduates of the Mechanical Engineering (Mech Eng) program.
- A Master of Science in Engineering (MSE) in the area of Electrical and Computer Engineering (EE), with a concentration in Software Engineering to graduates of the Software Engineering concentration.
- Students will receive recognition on the University transcript at the end of the semester when requirements of a Graduate Certificate program are completed.

Program Requirements include:

Orientation

A one-day mandatory orientation session is held in January and August prior to the start of classes. Students will receive information regarding student responsibilities while enrolled, requirements specific to their particular program, and information regarding payment of tuition and fees. At orientation, students will also obtain a student ID. Students in the online Mechanical Engineering program can also participate in an online orientation through Canvas.

Courses

The Engineering Management program consists of a total of eight long semester courses that meet once per month on Friday and Saturday, and two project courses normally taken during the summer sessions. Students taking two courses each long semester may complete the program in two years.

The Software Engineering program has a total of four long semesters and two summer semesters with classes meeting Friday and Saturday. SWE students can elect to take a Master's Report in place of 1 class.

Students in the both the Mechanical Engineering degree and graduate certificate programs participate in online classes asynchronously via Canvas.

Master's Report (Software Engineering)

A Master's Report is an option and is submitted in the final semester of the two-year program.

Projects (Engineering Management)

Two projects courses, Projects A and B, are required. A project is submitted and a presentation is given each summer of the two-year program. If a student misses enrolling in the projects course either summer, they are required to take it the following semester, unless other arrangements have been made with the Graduate Coordinator. First year students attend a four-day presentation event their first summer, and second year students attend a two-day presentation event.

Master's Report and Projects

Before registering for SWE Master's Report or Thesis option or ENM Projects course(s), students must submit your topic and supervising faculty member's name or committee member's names to the Graduate Coordinator. An email will be sent soliciting the online submission of the required information.

A Projects Workshop is held each spring semester at which the Program Directors and TxEEE Staff provide information to students on the process and deadlines.

Attendance, Absence, and Punctuality

Regular attendance at all meetings of the classes for which a student is registered is expected. Students are responsible for contacting faculty directly to submit any work due in a missed class session and to arrange to make up any work missed.

Dropping a Course and Q Drops

A student may drop a course with the required approvals through the last class day of a semester or summer term. **From the thirteenth through the twentieth class day of a long-session semester, and from the fifth through the tenth class day of a summer term, the student may drop a course with no academic penalty.** After the twentieth class day of a long-session semester, and after the tenth class day of a summer term, the instructor will be asked to record either a “Q” or “F” symbol on the drop form. A “Q” is recorded if the student is passing the course or a grade of “F” will be recorded if the student is failing at the time the course is dropped.

Students must contact the Graduate Coordinator to drop a course. Failure to submit an email request to the Graduate Coordinator will result in responsibility for the full amount of tuition and fees due for each course, and may result in a failing grade.

If the student is in a warning status because of failure to maintain a grade point average (GPA) of at least 3.0, he or she may not drop a course without the recommendation of the graduate adviser and the approval of the graduate dean.

Specific deadlines for dropping a course are given in the academic calendar. Contact the staff for information regarding these dates. **Please note that full refunds are given only prior to the first class day of the semester.** See the “Refunds” section for additional information. PLEASE SEE COMPLETE REFUND SCHEDULE. (p. 17)

Leave of Absence

A request for leave must be made in advance of the semester for which the leave is granted. Please contact the Graduate Coordinator for assistance in completing the withdrawal form (see ‘Contacts’, page 3). Once a withdrawal request for the semester has been received by the program, a “Leave of Absence” form will be completed for the student. This form permits the student to return to The University within two long semesters. Please note that the student must complete an “Application for Readmission” in order to be readmitted to UT and to resume courses.

Withdrawal

Dropping an entire course load constitutes withdrawal from The University for that semester. Please contact the Graduate Coordinator for assistance in completing the withdrawal form (see 'Contacts', page 1). The refund schedule for withdrawal from classes is identical to the schedule for refunds for adds and drops (see above). Students cancelling or withdrawing are responsible for tuition according to the UT refund schedule (p. 17).

Dismissal

A student who fails to meet the admission conditions may be subject to dismissal. The standard Office of Graduate Studies admission conditions may be found at: <http://catalog.utexas.edu/graduate/degree-requirements/warning-status-academic-dismissal-termination/> and are:

1. the student must make satisfactory progress in fulfilling any conditional admission conditions that were imposed
2. meet any requirements made in writing by your Graduate Studies Committee (GSC),
3. maintain a grade point average of at least 3.0, and
4. have approval of the Graduate Studies Committee

Additionally, the student must be making satisfactory progress toward a degree as determined by his/her Graduate Studies Committee. If the GSC determines that a student is not making satisfactory progress, it may recommend that the student's program be terminated. Please note that a student with a grade point average below 3.0 at the end of any semester will receive a warning letter from the Graduate School and must bring his/her cumulative graduate grade point average up to at least 3.0 by the end of the following semester in which the student is enrolled. Students under Office of Graduate Studies warning must have approval of the graduate dean to drop any courses in the warning semester.

SPECIAL NOTE to SWE students: In addition to meeting OGS requirements, must also meet requirements of the Department of Electrical and Computer Engineering: no more than one class with a grade of 'C' may be applied to the student's overall program of work requirement.

Scholastic Dishonesty

Plagiarism and other forms of scholastic dishonesty are serious academic violations that will not be tolerated. Scholastic dishonesty encompasses, but is not limited to, cheating, plagiarism, collusion, and any act designed to give an unfair academic advantage to the student.

"Cheating" includes, but is not limited to:

- copying from another student's work
- using materials not authorized by a testing proctor
- possessing materials that are not authorized by a testing proctor, such as lessons, books, or notes
- knowingly using or soliciting, in whole or part, the contents of an unadministered test

- collaborating with or seeking aid from another student without authorization during the test
- substituting for another person, or permitting another person to substitute for oneself, in taking a course test or completing any course-related assignment
- using, buying, stealing, or transporting some or all of the contents of an unadministered test, test rubric, homework answer, or computer program

“Plagiarism” includes, but is not limited to, the appropriation, buying, receiving as a gift, or obtaining by any means someone else’s work and then submitting that work for credit as if it were one’s own.

“Collusion” includes, but is not limited to, unauthorized collaboration with another person in the preparation of an academic assignment offered for credit.

The penalties for scholastic dishonesty in graded assignments include the possibility of failure in the course. Scholastic dishonesty in examinations will result in a grade of “F” on the examination and an “F” in the course.

Examinations and Grades

Examinations, reports and other assignments are given in the program courses. Faculty members grade students not only on their examinations but also on various assignments, course deliverables and class participation. However, grades are given for each of the courses offered in the program with the exception of the report courses, which are only offered on a Credit/No Credit basis. A student receiving a grade of C or higher satisfies the course requirement. To remain in good academic standing and to graduate from the program, a student must maintain a 3.0 GPA or “B” average. Please also note that graduate courses use a +/- grade system. Letter grades with their decimal equivalents are as follows:

A	4.00	A-	3.67	B+	3.33
B	3.00	B-	2.67	C+	2.33
C	2.00	C-	1.67	D+	1.33
D	1.00	D-	0.67	F	0.00

Incompletes

If a student does not complete all assignments in a course before the end of the course, the instructor may report the symbol “X” (temporary incomplete) to the registrar in place of a grade. The student must then complete the course requirements by the last class day in his or her next long semester of enrollment and the instructor must report a final grade by the end of the grade reporting period in that semester. If these deadlines are not met, the symbol “X” is converted to the symbol “I” (permanent incomplete). If the student is not enrolled during a long semester for twenty-four months following the end of the semester in which the “X” is reported, and the instructor does not report a final grade, then the symbol “X” is converted to

the symbol “I”. The symbol “I” cannot be converted to a grade. When the symbol “I” is recorded, the student must register and pay for the course again in order to receive credit.

Grade Reporting

Grades are reported at the end of each semester and are viewable online at <https://onestop.utexas.edu/student-records/grades/>. Students may view and print an unofficial grade report at this site. Official grade report forms are not mailed directly to students. If you require an official grade report, for example for company tuition reimbursement, you must order an official transcript each semester at a cost of \$20. Students may order a transcript online with their UT EID and password at: <https://onestop.utexas.edu/student-records/transcripts-other-records/>.

Transcripts

A student in the Engineering Master’s Program can order a copy of their transcript online or by using the telephone, ordering in person, or by a third party order. For more information on transcripts, please visit: <https://onestop.utexas.edu/student-records/transcripts-other-records/>

Graduation/Commencement

The University of Texas Office of the Vice President and Dean of Graduate Studies coordinate commencement ceremonies for The University’s graduating class. Information from the Office of Graduate Studies will be sent directly to you upon your certification of graduation. Diplomas are mailed to your permanent address (address of record) 4-6 weeks after graduation.

Students are eligible to attend the following graduation events:

- University-wide Commencement: held each May
- Graduate School Convocation: held each May
- Cockrell School of Engineering Convocation: held each May

In addition, Texas Engineering Executive Education holds an End of Semester Celebration for Executive and Professional Master’s of Science in Engineering and Graduate Certificate programs. For information on graduation events, please contact the Graduate Coordinator.

Section III: Financial Information

Program Fees

The fee for the Engineering Executive Master's Program varies by program and covers the following items for the entire two-year program: orientation, tuition and fees, report or projects course(s), graduation, a supplemental on-line learning environment, and access to The University of Texas at Austin resources.

A non-refundable tuition deposit of \$1000 is due upon admission into the program in order to secure placement. This initial fee is applied to the total program fees for the first semester's bill. The program fee by course of study is as follows:

Program	Total Program Tuition	Tuition and fees Per Class
Engineering Management	\$46,000	\$4,600
Mechanical Engineering	\$40,000	\$4,000
Software Engineering	\$34,000	\$3,400

Coursework Beyond the Two-Year Program

If a student extends their program of study beyond two years and the program institutes a fee increase, the student will be required to pay the new fee. Further, The University of Texas Graduate School policy states that a student must complete their program of study within six years beginning at the first semester enrolled in the program.

Bars

A bar is a code placed on the records of students who have not met financial or non-financial obligations to The University. A financial bar is a delinquent debt, such as non-payment of tuition, library books or parking tickets. A non-financial bar may be caused by failure to turn in health center forms or visa information (international students). A bar on your record will prevent you from registering, adding classes, graduating and obtaining transcripts. ***It is the responsibility of the student to make sure that all bars are cleared before each registration period begins, including payment of the full tuition amount for the current semester.*** Plan to check your bars at this site prior to registration each semester:

<https://utdirect.utexas.edu/registrar/ris.WBX>

A student can pay for their financial bar online on the "What I Owe" page using their UT EID and password: https://utdirect.utexas.edu/acct/rec/wio/wio_home.WBX

Billing

A billing statement for payment of program fees is generated for each student each semester. It is sent as a .pdf attachment each semester to each individual student's **primary e-mail address** around the following dates:

Fall – August 15 | Spring – December 1 | Summer – April 15

Books, software, and other materials or supplies required for completing coursework are the responsibility of the student and are not covered by the regular program fees. However, in some semesters there may be books or other required materials or supplies for some courses that the student would not be able to acquire easily or at a competitive price without the program's assistance. In these circumstances, the program will acquire the materials and distribute them to the students and then submit a separate, itemized billing statement to the student for the items. This billing statement typically arrives toward the end of the semester.

Student Acknowledgment

Each semester, upon receipt of the invoice, it is the student's responsibility to do two things:

- 1) Verify that the course offering(s) listed on the invoice are correct
- 2) Notify TxEEE Accounting regarding plans for payment – in particular if any funds will be disbursed through the Office of Financial Aid, through a company sponsorship program (vouchering or reimbursement), or if the student will be receiving VA benefits.

Deadlines

Payment **must** be received by the Texas Engineering Executive Education on or before **the due date indicated on the invoice** (approximately 30 days from the invoice date.)

Fall – September 15 | Spring – January 15 | Summer – May 15

Please contact TxEEE Accounting if you have any questions regarding these policies.

Payment Methods

Payments may be submitted by a number of methods, and methods 2 – 4 must reference the full invoice number:

- 1) Office of Financial Aid – these are typically Federal loans, and the student must: coordinate with OFA to ensure that proper procedures are completed in order to have funds disbursed, sign a TxEEE promissory note prior to enrollment, and provide TxEEE Accounting with the payment schedule. Financial Aid is disbursed electronically directly to the Executive

Engineering Master's Program, however in the event the disbursement is made to the student it is the responsibility of the student to submit payment to TxEEE.

- 2) Company Vouchering – this method typically proceeds as outlined:
 - a. The student requests company funding for their education and completes all company-required documentation according to the organization's deadlines.
 - b. The company approves educational funding and sends the student a voucher verifying the amount of financial support.
 - c. The student forwards the voucher to TxEEE Accounting in advance of the payment deadline.
 - d. TxEEE Accounting invoices the company directly on behalf of the student.
- 3) Self-payment, which has three options:
 - a. **Most forms of electronic payment are submitted through the “What I Owe” feature of UT Direct found at: https://utdirect.utexas.edu/acct/rec/wio/wio_home.WBX.**
 - b. Personal checks, which may be either sent via the US mail or hand-delivered to the TxEEE office.
- 4) A pre-approved payment plan may be requested each semester. Payment plans must be in writing and approved by TxEEE Accounting in advance of the payment deadline. A payment plan can be divided into no more than three payments per semester, and will be assessed a \$50 service fee on the billing statement each semester a payment plan is used. Typically, the first payment must be received on or by the payment deadline and equal at least fifty percent (50%) of the total semester's bill.

NOTE: Students on a reimbursement program with their company are responsible for and must make arrangements to pay tuition prior to registration using another method by the deadline.

Students are responsible for remitting all tuition and fees billed, even if they are receiving assistance from a third party. Failure to make scheduled payments each semester will result in the loss of installment privileges, and will prevent registration in subsequent semesters.

In each situation stated above, it is the student's responsibility to meet all agreed upon deadlines and to provide all necessary information and documentation regarding financial arrangements. Failure to pay by the agreed upon deadline may result in:

- 1) Placement of a bar on your record until full payment is received
- 2) Disqualification of waivers for subsequent semesters
- 3) A late payment fee on the unpaid balance
- 4) Dismissal for the remainder of the semester and a bar on future registration until the amount is paid in full.

There are no exceptions to this policy. Please observe the payment deadlines & special request policies.

Financial Assistance

The Texas Engineering Executive Education office is unable to provide direct financial assistance to students. However, students who are U.S. citizens or permanent residents who are enrolled

in the program are eligible for Federal Loans through the Office of Financial Aid (OFA). Please contact OFA at 512.475.6282 for more information regarding these loans. Students are also encouraged to check with a lending institution of their choice for other possible student loans.

In order to apply for a federally-backed educational loan, you will need to complete the Free Application for Federal Student Aid (FAFSA) online at <http://www.fafsa.ed.gov/>. Once this form has been submitted, you may also sign up to receive your Financial Aid Notification (FAN) electronically at <http://finaid.utexas.edu/>. You will need to complete the FAFSA each fiscal year you wish to receive aid.

It is important to note that your application is completed based on your income tax filing for the previous year and your award will be for the **Summer and Fall of the application year and the Spring in the following year** (i.e. your 2018 income taxes are filed in 2019, and your financial aid is awarded for Summer & Fall 2019, and Spring 2020.) It is important to pay attention to all communications received in regards to your financial aid in order to avoid delaying your payment.

Veteran's Administration Information

Eligible students in the Executive Engineering Master's Program can receive Veterans Administration benefits through the Office of the Registrar at The University of Texas at Austin. Please call 512.475.7540 for more information. General information and guidance regarding Veterans Administration benefits is available at: <http://www.va.gov> (for applicants) or <https://onestop.utexas.edu/managing-costs/veteran-education-benefits/> (for UT Austin students).

Please note that the Hinson-Hazelwood benefits are not available for students enrolled in the Executive Engineering Master's Program because the program is self-supporting and does not receive State funding.

There are several steps and the Office of the Registrar must receive several pieces of information from both the student receiving benefits and the program the student is enrolled in to request the funds for the student.

- 1) Each semester, the student must apply to receive Veteran's Administration benefits by contacting the Veteran Certification Team.
- 2) The student must submit a copy of their Degree Plan. If the student is in a lock-step or prescribed program the Degree Plan will only need to be submitted in the student's first semester, unless there is an update to the courses offered during the student's course of study. For other programs, where the student has the opportunity to choose their own courses based on interest, the Degree Plan must be submitted each semester once courses have been chosen via the registration survey. The Degree Plan document is requested by submitting an email request to execed.accounting@austin.utexas.edu, including the student's name, EID, and program of study.
- 3) Each semester each student must submit a Semester-Specific Letter recording the classes they will be enrolled in. This document is also requested by submitting an email

request to exced.accounting@austin.utexas.edu, including the student's name, EID, and program of study..

- 4) The Veteran Certification Team will request an invoice directly from the program once steps 1-3 have been complete. Additionally, the invoice cannot be submitted until the student is registered in their courses, and first time students may experience a slight delay in the first semester due to a later registration date for new students.

Submission of the required paperwork is completely dependent on the student's communication with both the Veteran Certification Team and the program. The Degree Plan and Semester-Specific Letter cannot be created until the student has completed the registration survey sent out by the Graduate Coordinator. The invoice cannot be created until the student has been registered for their courses for the semester. Prompt response to all email communications from the Veterans Certification Team and the program will ensure that paperwork can be submitted as quickly as possible.

Delinquent Accounts

Students with delinquent accounts will be referred to an outside collections agency to collect payment.

Receipts and Itemized Receipts

Receipts are generated within one week of any portion of the invoiced tuition being paid, and e-mailed to the student's primary email address, with any outstanding balance reflected at the bottom. Additional payment will result in additional receipts until the invoiced amount, plus any accrued late penalties, are paid in full. Itemized receipts are not generated except under special circumstances, and must be requested a minimum of two weeks prior to the date they are needed in the semester. Waiting until the end of or after the semester has ended will result in delays. An itemized receipt will only break out an estimated cost for each course and the individual student's mandatory fees.

Late Fees

A fee of 5% of the total outstanding tuition will automatically be assessed on delinquent payments on the third business day following the payment deadline, and an email will be sent to your primary email address notifying you of the late fee.

All late fees and tuition must be paid in full or registration and graduation will not occur. In addition, in the event that the Graduate Coordinator is unable to register a student during the normal registration period due to a registration bar, for not indicating registration preferences, or for any other reason not due to staff error, the student will be charged The University's late registration fee as follows:

- \$25.00 through the fourth class day (second class day of a summer term)

- \$50.00 from the fifth through twelfth class day (third and fourth class days of a summer term)
- \$200.00 after the twelfth class day (after the fourth class day of a summer term)

These class days are determined by The University's traditional semester calendar.

Refunds

The Executive Engineering Master's Programs use The University's refund policy; however, class days in the onsite and hybrid programs that meet once per month are determined by the number of contact hours that have been held as follows:

- 100% - Before the first class day
- 75% - On the first class day (the Friday of the first weekend)
- 50% - On the second class day (the Saturday of the first weekend)
- 25% - On or before the third class day (the Friday of the second weekend)
- 0% - On or after the fourth class day (the Saturday of the second weekend)

Additionally, when a student is in either an onsite or hybrid programs that meet once per month is **only** registered for a course(s) that does not have class days (such as the Master's Report or Projects) **or** for students in the online programs that follows a traditional weekly meeting schedule, the following refund policy applies:

- 100%-Before the first class day
- 75%-From the first through fourth class day (first and second day of a summer term)
- 50%-From the fifth through twelfth class day (third and fourth class day of a summer term)
- 25%-From the thirteenth through sixteenth class day (fifth and sixth class day of a summer term)
- 0%-After the sixteenth class day (sixth class day of a summer term)

These class days are determined by The University's traditional semester calendar.

1098-T Information

The University releases 1098-T information on behalf of each student to the Internal Revenue Service each year in January. You may download your 1098-T for the previous year from UT Direct beginning in the first week of February. Please note that the Executive Engineering Master's Program reports all tuition as invoiced each semester minus the mandatory fees (the "Less Third-Party Billing" amount reflected on your "My Tuition Bill" page) as tuition. Any payments received on your behalf through company sponsorship are reflected as scholarship funds.

Please note that the 1098-T information is not automatically released for International Students since many are exempt from filing US income tax. If you are considered an international student and **do** file US income tax you must request to have your 1098-T information sent to you in UT Direct.

Tax Information for Graduate Students

Please visit the following website: <http://www.irs.gov/uac/Tax-Benefits-for-Education:-Information-Center> for information regarding tax issues for graduate students. Changes were made to improve the tax situation for graduate students when the Taxpayer Relief Act of 1997 came into effect. Please contact a tax practitioner about your personal income tax situations if you have questions.

“What I Owe” and “My Tuition Bill”

“What I Owe”: One of two important pages related to a student’s University finances, it reflects any outstanding balances owed to The University of Texas at Austin. All charges from a single University department are grouped together. In addition to showing what you owe, on the actual webpage there is also a Navigation Menu on the left-hand side with links to available payment options, a link to “My Tuition Bill”, and clicking on the Total Amount will take you to your transaction history.

“My Tuition Bill”: The second important page related to a student’s finances, it is the screen which reflects all of The University mandatory and optional fees assessed each semester. The types of fees The University assesses vary by student and semester, as well as by program and course load. There are a couple important points to note in regards to this screen.

- 1) It is the simple and quick way to verify that everything that needs to be done to register for classes has been completed
- 2) It is where you can confirm your registration and intent to attend in the given semester, if necessary
- 3) It is where you will see any optional fees that you have elected, the program does not pay your optional fees and you will be financially responsible for any of the optional fees you select.

Normally, the program pays all of your mandatory fees and confirms your registration prior to the University’s deadline, which follows the traditional academic calendar, and the student will see the following line about a third of the way down the page:

**** Your registration is complete ****

As well, both of the lines: “Total Tuition and Fees Billed” and “Current Balance”, are \$0.00 (excluding optional fees).

A student who shows ** Your registration is complete ** on this page is responsible for all tuition and fee amounts for the semester and must contact the Graduate Coordinator in order to drop any courses or be eligible for any refund.

Deposit/Tuition Refund (if Applicable)

While our office can authorize the issuance of a refund, those funds are released from the University and may take many weeks to reach the student. It is also important to note that if a refund is authorized and a bill is placed on the student's account from any University source (tuition, parking, library, etc.) prior to the funds being released to the student, the amount of the bill will be absorbed from the pending refund to pay the student's University obligation first. Then, if any funds are remaining, the refund will be made to the student. The refund will be sent to the payment address the student has on file with the University, if no electronic banking is on file.

Section IV: General UT Policies & Information

Student ID and UT EID

The Executive Engineering Master's Program will provide each student with one picture identification card that enables the use of many university facilities and services. Additionally, discounts are available from various community businesses (movie theaters, restaurants, etc.) upon showing your UT student ID. In the event of loss, the student will be invoiced \$10 for a replacement card. Please be sure to notify the staff if you lose your ID card. The Student ID Card is also used to access buildings which are closed to the public, and should be carried on your person when attending classes in-person on Saturday's to grant building access.

In addition to your student ID card, each student has a UT EID for use not only in identification but also to use to logon to University internet resources. You typically pick your password when you set up your UT EID, however, under normal circumstances students also pick a high assurance password for using secure services (making payments, etc) when they pick up their photo IDs. Graduate students may call 512.475.7391 to setup their high assurance password for their UT EIDs.

Students can access and update much of their personal information online through UT Direct. There is a link from The University of Texas homepage found at <http://www.utexas.edu/> and the UT Direct link can be found in the list across the top of the page. Accessing UT Direct will require that the student know his/her UT EID and password.

International Students

The University of Texas at Austin International Office provides a variety of services and programs for international students. They are located at 2400 Nueces Street (in International Office building, INT). Their phone number is 512.471.2477.

All international students regardless of visa status are assessed a mandatory student fee each semester by the International Office that must be paid by the student. The fee is \$125 each semester as of fall 2016.

International students who attend the Engineering Management program on an F-1 student or J-1 exchange visa are automatically enrolled in the student insurance program and billed for the cost of that policy. International students attending the program on an employer visa are exempt from this requirement with the assumption that they are enrolled in their employer's insurance program.

International students are also required to go to the International Office prior to registration in order to clear their non-financial bars. International students must show their Visa or their required INS documentation in order to have their bars cleared before registration. Students in F-1 and J-1 status must attend a mandatory immigration check in through ISSS prior to the first day of class.

Health Center

All students must meet UT requirements regarding the **Meningococcal (Bacterial Meningitis) Vaccine**. Please visit this link for more info:

<http://www.healthyhorns.utexas.edu/requiredvaccine/>.

Additionally, The University Health Center requires that all newly admitted International Students complete a "TB and Vaccination History" form. This form, which is required by the State of Texas, must be on file at The University Health Center before an International Student can be registered for classes. International Students who are admitted to UT automatically receive a non-financial bar on his or her record for this form. Once the form has been received by The University Health Center, the bar is removed from the students' record. Please make sure that you request and complete this form and submit it to The University Health Center before you begin classes. More information and the form can be found at:

<http://www.healthyhorns.utexas.edu/internationalstudents.html>.

UT Libraries

UT libraries offer a wide variety of services, which include borrowing, reserves, interlibrary services, copying/printing, study spaces, media services, media labs and etc. All students that are currently enrolled or qualify for summer privileges can use their UT ID cards to check out materials. Please visit this link for more info: <http://www.lib.utexas.edu/>

Engineering Software

The University of Texas at Austin has licensed MATLAB, Simulink, and 23 companion toolboxes for the campus under the MathWorks Total Academic Headcount (TAH) license. Please refer to the website <http://www.engr.utexas.edu/itg/products> for access instructions on downloading, installing and activating MATLAB. Once you have arrived at the University MATLAB page, click on the "Students" tab at the top of the page and you will be prompted to enter your EID and password for access to the instructions.

Career Services

The Cockrell School's Engineering Career Assistance Center (ECAC) connects students and employers for internships, co-op programs and jobs after graduation. ECAC coordinates on-campus recruiting, including interviews, career fairs, information sessions and job postings, as well as offers individual career counseling and workshops for students, helping them to develop resumes and job searching skills.

The Career Center hours is located at Engineering Education and Research Center (EER) at Room 2.604. The center is open from Monday to Friday 8:00 am-5:00 pm; counselors are available 9:00-11:30 am and 1:00-4:30 pm. For further information, please call 512.471.1915.

Sanger Learning Center

Sanger Learning Center offers a number of services for graduate students, including helping graduate students improve writing skills and overcome learning challenges. Contact them at 512.471.3614 with questions.

Sanger Learning Center's graduate student writing service is the only all-inclusive graduate writing assistance available on campus. You may bring in a paper, thesis, dissertation, grant proposal—any writing project in any discipline—and get immediate feedback for improving your work. They provide all students at least three free tutoring sessions each semester.

The graduate school experience can be challenging in many ways. You may also meet with a learning specialist to discuss your professional goals, procrastination, or anxiety about writing your dissertation.

Student Veteran Services

Student Veteran Services at the Office of the Deans of Students helps all students using federal and state veterans' education benefits. They walk current and prospective students through the benefits application and certification process, provide veteran-centered academic support, career services, health care and wellness resources and support the ongoing success of veterans on campus.

The office is located at Student Veteran Center, 4.472 at Student Services Building. Their office hours are Monday through Friday 8:00 am-5:00 pm. No appointment necessary.

Students with Disabilities

The University of Texas at Austin has a written policy, which states that students with disabilities will be provided with academic accommodations. The purpose of academic accommodations is to assure that there is equal access to and the opportunity to benefit from all educational programs at UT. It is the student's responsibility to identify themselves to Services for Students with Disabilities (SSD) and to provide documentation of a disability.

Strict documentation guidelines exist for different types of disabilities. Information on documentation guidelines for cognitive disabilities can be found on the SSD web <http://diversity.utexas.edu/disability/> If you require additional information about SSD, please contact The Office of the Dean of Students directly by calling 512.471.6259. The program does adhere to policies associated with students with disabilities.

Prohibition of Sexual Harassment

The University of Texas at Austin strictly prohibits discrimination or harassment of students based on gender, race and sexual orientation. The University publishes guidelines and policies that prohibit discrimination in these three areas. The Office of the Dean of Students has primary responsibility for responding to questions about and receiving complaints of discrimination or harassment of students. If you experience problems associated with harassment, please call 512.471.1201.

Reporting Misconduct

Report Misconduct

As a continuing and professional education unit of the Cockrell School of Engineering at UT Austin, we are committed to upholding and abiding by the values and policies that ensure the safety and well-being of our learners, instructors, and staff. Part of this commitment entails making our community aware of the expectations and resources available as it pertains to incidents involving prohibited conduct covered by Title IX, Texas Senate Bill 212, and University Policy 3-3031. The University strongly encourages the prompt reporting of such incidents, and provides a variety of options to submit a report

Why Report?

- The incident has negatively affected your class experience.
- You have concerns about your safety or the safety of the community.
- You need someone to confide in or want to seek assistance and support, but you are not seeking action or do not want to name the Respondent.
- You want the University to pursue disciplinary action against the Respondent.
- You want a No Contact Directive to be placed between you and the Respondent.
- You would like to be provided with resources.

How to File a Report

- Online: (https://utexas-advocate.symplicity.com/titleix_report/index.php/pid334719?)
- By phone: 512-471-0419
- In-person:

University Administration Building
1616 Guadalupe Street, Suite 2.507
Austin, TX 78701

Additional Resources

The University's Title IX Office has several handouts and guides, which can be accessed via this link (<https://titleix.utexas.edu/helpful-handouts>), that provide an overview of resources available for assistance and support.

What is Title IX?

Title IX is a federal law that prohibits discrimination on the basis of sex in education. UT policy prohibits discrimination on the basis of sex, gender, gender identity, gender expression, and sexual orientation. For more information on Title IX, please visit the UT Title IX office website: <https://titleix.utexas.edu/what-is-title-ix>

What is Texas Senate Bill 212?

Beginning January 1, 2020, Texas Senate Bill 212 legally requires that all Mandatory Reporters of Texas universities, which includes all University employees and PETEX instructors, report any information to the Title IX Office regarding sexual harassment, sexual assault, dating violence, and stalking that is disclosed to them. For more information on SB212, please visit the following website: <https://titleix.utexas.edu/faqs>

What is University Policy 3-3031?

It is the policy of The University of Texas at Austin to provide an educational and working environment for its students, faculty, and staff that is free from sex discrimination (including discrimination on the basis of sexual orientation, gender identity or gender expression), sexual harassment, sexual assault, sexual misconduct, interpersonal violence (including domestic violence and dating violence), and stalking. In accordance with federal and state law, the University prohibits discrimination on the basis of sex (including gender) and prohibits sexual harassment, sexual assault, sexual misconduct, interpersonal violence, and stalking. For more information on University Policy 3-3031, please visit the University Policy Office's website: <https://policies.utexas.edu/policies/prohibition-sex-discrimination-sexualharassment-sexual-assault-sexual-misconduct>

Alcohol and Tobacco

Please note that the policies of The University of Texas at Austin regarding alcoholic beverage consumption are very strict. Alcoholic beverages are prohibited from University activities without express written permission and prior approval, which must be obtained from the Office of the Provost.

As of April 9, 2012, The University of Texas at Austin became a tobacco-free campus. The University prohibits the use of any tobacco product on campus property, including but not limited to cigarettes, cigars, water pipes (hookah) and smokeless tobacco. It also prohibits innovations in smoke or tobacco products such as any non-FDA approved electronic nicotine delivery device, e-cigarette or vape pen.

Religious Holidays

A student who is absent from a class or examination for the observance of a religious holy day may complete the work missed within a reasonable time after the absence, provided the student has notified the instructor in advance in writing of the dates he or she will be absent. Notification must be made two weeks prior to the absence or on the first class day if the

absence will occur during the first two weeks of class. In addition, the notification must be personally delivered to the instructor and signed and dated by the instructor, or sent certified mail with a return receipt request. A student who fails to complete missed work within the time frame allowed will be subject to the normal academic penalties.

Rec Sports

The University Recreational Sports Center is located on San Jacinto and 21st Street. Students enrolled in the program are eligible to use the RecSports Center. For more information regarding the use of the facilities, please check out their web site at <http://www.utrecsports.org/>.

Tickets to UT Events and the Longhorn Sports Package

The University of Texas at Austin has a number of different activities that occur on campus throughout the year. These activities include athletic events such as: football, baseball, basketball, volleyball, swimming, and many other activities; and performing arts events such as: theatre, dance, opera, symphony, and other musical performances. If you are interested in purchasing tickets to these various activities, please contact the Athletics Ticket Office at 512.471.3333; or, for tickets to any performing arts function please call 512.471.1444. In addition to individual tickets, as a member of The University of Texas student body you are also eligible to purchase The Big Ticket. Information regarding this economical package may be obtained at <http://www.texassports.com> under the heading "Tickets".

Please note that your program fees do not include the cost of tickets to any of these events or activities.

Texas Performing Arts

Texas Performing Arts offers \$10 student tickets to all Essential Series performances (Broadway excluded) on a first-come, first-served basis. Tickets are available online (convenience charges apply) or in person at the Bass Concert Hall Ticket Office. Students with a valid ID can purchase two tickets at \$10 each.

For additional information, you can contact Ticket Office at 512-471-1444 or visit their website <https://texasperformingarts.org/>.

The Office of Graduate Studies

The University of Texas at Austin's Office of Graduate Studies is located in the Main Building, Room 101. Their phone number is 512.471.7213 ext. 2. The Graduate Studies office oversees the policies, rules and regulations that govern graduate studies at UT. The Option III Executive

Engineering Master's Program reports to the Cockrell School of Engineering as well as to the Dean of Graduate Studies.

Section V: Engineering Management Program Specifics

Engineering Management **Program Overview & Degree Requirements**

Upon completion of all the program requirements, which include 30 credit hours comprised of eight 3-credit-hour courses and two 3-credit-hour project courses, the student is awarded a Master of Science in Engineering (MSE) degree with a concentration in Engineering Management (EM). Students must maintain a 3.0 or greater GPA and all courses used to satisfy degree requirements must be completed within a 5-year period.

The mission of the ENM Program is to significantly contribute to an engineer's managerial leadership abilities within their technological organization by allowing students an opportunity to pursue higher education that is innovative and intellectually inspiring by providing courses that teach engineers how to lead and manage their projects, processes, personnel, products and services in real-world situations.

The core objective of the ENM Program is to provide engineers who have chosen to pursue leadership and management career paths with tools and education that will most directly support their leadership and management success. Additional objectives are:

- To incorporate an understanding of the measurement of the technical, business, and human performance processes associated with management and leadership in engineering environments
- To enhance a student's perspective on leadership and management of technology-based organizations that are relevant to today's industry practices
- To provide a program that develops expertise in the management of innovation
- To provide a program where students learn to develop knowledge and skills to effectively manage projects and processes
- To provide a program where students learn to identify and balance risks associated with technology development
- To provide a program that broadens an engineering manager's perspective on the marketing of technological products and services, the potential success or failure of an engineering project with respect to financing the venture, and legal issues that affect technology
- To provide a program that is challenging, innovative, and intellectually inspiring

The overall goal of the degree program is to provide engineering professionals with these foundations and to continue their lifelong learning while employed in industry.

The program will enable technically oriented and highly motivated individuals to maintain contact with their engineering career rather than having to consider a change to purely management-related roles. Engineers are well educated in the technical aspects of their work. However, many lack experience and knowledge in several managerial aspects of their business. It is important that engineers have a good understanding of the needs of economic management, marketing, and the legal implications of design decisions (e.g. through patent infringement or, indeed, the knowledge of when to apply for a patent and what information is

required to achieve it). In addition, it is important that engineers understand the subsequent effects of product liability and, more importantly, personnel interaction.

Remote Availability

The Engineering Management Master's program is offered both onsite and online via synchronous video conferencing. Attendance at orientation the first semester is required for all online students. Synchronous online attendance requires that students be available for class each class weekend at US Central Standard Time. Special note for all students: Your voice and/or image will be recorded as part of the online courses.

Program of Study

Year 1

Fall Semester

ENM 382E.3 Engineering Operations Management (3 Credit Hours)

ENM 381E.2 Legal Issues and Technology Management (3 Credit Hours)

Spring Semester

ENM 380E.1 Managing People and Organizations (3 Credit Hours)

ENM 382E.1 Analytics for Engineering Managers (3 Credit Hours)

Summer Semester

ENM 397P Projects in Engineering Management I (3 Credit Hours)

Year 2

Fall Semester

ENM 382E.2 Strategic Decision & Risk Analysis (3 Credit Hours)

ENM 381E.3 Finance and Accounting for Engineering Managers (3 Credit Hours)

Spring Semester

ENM 381E.1 Marketing and Negotiation (3 Credit Hours)

ENM 380E.2 Engineering Project Management (3 Credit Hours)

Summer Semester

ENM 397P Projects in Engineering Management II (3 Credit Hours)

PROGRAM OF STUDY – FAST TRACK STUDENTS

Fall 1

ENM 382E.3 Engineering Operations Management (3 Credit Hours)

ENM 381E.2 Legal Issues and Technology Management (3 Credit Hours)

ENM 382E.2 Strategic Decision & Risk Analysis (3 Credit Hours)

ENM 381E.3 Finance and Accounting for Engineering Managers (3 Credit Hours)

Spring 1

ENM 380E.1 Managing People and Organizations (3 Credit Hours)

ENM 382E.1 Analytics for Engineering Managers (3 Credit Hours)

ENM 381E.1 Marketing and Negotiation (3 Credit Hours)

ENM 380E.2 Engineering Project Management (3 Credit Hours)

Summer 1

ENM 397P Projects in Engineering
Management I (3 Credit Hours)

Fall 2

ENM 397P Projects in Engineering
Management II (3 Credit Hours)

Courses

ENM 380E.1 Managing People and Organizations (3 Credit Hours)

Introduction to frameworks from the social sciences that are useful for understanding what effective leaders do when working with others.

ENM 380E.2 Engineering Project Management (3 Credit Hours)

Explore methods for organizing, coordinating, and controlling resources to minimize risk and conflict, and to maintain budgets and schedules. Discuss the evaluation of competing alternatives, organization of a project, scheduling of tasks and resources, and the role of management.

ENM 381E.1 Marketing and Negotiation (3 Credit Hours)

Explore major marketing concepts and variables, their interrelationships, and their implications for policy making, problem solving, and strategy formulation. Examine the development of sophisticated strategies and tactics to pursue mutually beneficial solutions.

ENM 381E.2 Legal Issues and Technology Management (3 Credit Hours)

Examine legal considerations in the practice of engineering management. Explore management disciplines to create maximum value from technology.

ENM 381E.3 Finance and Accounting for Engineering Managers (3 Credit Hours)

Introduction to fundamental concepts in finance and accounting with application. Explore how to evaluate investment and financing opportunities in a corporation.

ENM 382E.1 Analytics for Engineering Managers (3 Credit Hours)

Explore theory and tools that allow the engineering manager to draw correct inferences from data and include those inferences in the decision-making process. Examine descriptive, predictive, and prescriptive analytics and statistics.

ENM 382E.2 Strategic Decision and Risk Analysis (3 Credit Hours)

Explore tools and methods for making high-quality decisions in the face of uncertainty, applied within an engineering context. Learn how to frame and analyze major decisions and how to overcome the biases that can degrade these decisions.

ENM 382E.3 Engineering Operations Management (3 Credit Hours)

Examine methods to improve the efficiency of an organization's operations. Explore management of production systems, inventory management, logistics, and supply-chain management.

ENM 397P Projects in Engineering Management I (3 Credit Hours)

Independent project carried out under the supervision of an Engineering Management faculty member.

ENM 397P Projects in Engineering Management II (3 Credit Hours)

Independent project carried out under the supervision of an Engineering Management faculty member. Project II represents a deeper dive and application of additional skillsets learned during the duration of the program.

Faculty

Course

Engineering Project Management
Managing People and Organizations
Strategic Decision and Risk Analysis
Analytics for Engineering Managers
Engineering Operations Management
Finance and Accounting for Engineering Managers
Marketing and Negotiations
Legal Issues and Technology Management

Instructor

Eric Bickel, Ph.D.
John Daly, Ph.D.
Eric Bickel, Ph.D.
John Hasenbein, Ph.D.
Britt Freund, Ph.D.
Heidi Toprac, MBA
Norman Kaderlan, Ph.D.
*TBA

*Faculty are subject to substitution based on availability

Section VI: Mechanical Engineering Program Specifics

MECHANICAL ENGINEERING

Program Overview & Degree Requirements

Upon completion of all the program requirements, which include 30 credit hours comprised of ten 3-credit-hour courses, the student is awarded a Master of Science in Engineering (MSE) with a concentration in Mechanical Engineering (Mech Eng). Students must maintain a 3.0 or greater GPA and all courses used to satisfy degree requirements must be completed within a 5-year period.

The 100% online, asynchronous, executive master's degree allows students to earn a world-class education from anywhere in the world. The online structure provides challenging materials using current best practices in online delivery including discrete lecture modules and experiential learning capabilities. Courses are presented as they relate to current industry trends, and the program incorporates a focus on intellectual property and how it relates to the mechanical engineering industry.

Modular courses in the online program have been designed from the ground up to incorporate current best practices in online education. Courses are broken into small, manageable segments that are completed asynchronously by a cohort of students. Lessons may consist of case studies, short videos, group discussions, and experiential projects for students to apply new knowledge. Students will receive regular feedback and communication from instructors and classmates within the cohort. After a series of lessons have been completed throughout the semester, students' progress is measured using traditional exams, project-based assessments and other measures.

Program of Study

Students will follow a prescribed set of courses to meet 30-credit hour program of work requirements.

Year One

Spring Semester

M E 381M Statistical Methods for Process Control and Manufacturing (3 Credit Hours)

M E 383M Heat Transfer in Industrial Systems (3 Credit Hours)

Summer Semester

M E 384M Fluid Mechanics in Industrial Processes (3 Credit Hours)

Fall Semester

M E 385M Applied Thermodynamics (3 Credit Hours)

Year Two

Spring Semester

M E 387M Introduction to Automatic Control (3 Credit Hours)

M E 397 Product Design Lab (3 Credit Hours)

Summer Semester

M E 391M Introduction to Manufacturing Systems (3 Credit Hours)

Fall Semester

M E 389M Materials Science and Engineering (3 Credit Hours)

Courses

M E 384M Fluid Mechanics in Industrial Processes (3 Credit Hours)

This course will offer practicing engineers and technology managers a comprehensive treatment of various fluid mechanics topics. Working professionals will enhance their knowledge and understanding of fluid flow and related phenomena in multiple application spaces. The skills developed in this course will benefit the design and analyses of various fluid-based systems.

M E 397 Product Design Lab (3 Credit Hours)

This course will focus on design methodology that will include a survey of current research in areas in design theory and methodology. Students will acquire tools for solving engineering system designs and synthesis problems which they can apply in a reverse engineering and redesign project.

M E 381M Statistical Methods for Process Control & Manufacturing (3 Credit Hours)

This course covers fundamental methods for statistical monitoring of processes, including Shewhart control charts, control charts for individual measurements, CUSUM charts and attribute control charts. In addition, design of experiments, including the statistical evaluation of main and interaction effects, as well as intelligent experimentation through reduced factorial experimental design, will be taught. DOE-based search techniques for surface response based design optimization will also be outlined. Finally, a lecture will be offered on advanced research in model based and active process control in highly flexible and sophisticated manufacturing systems, such as semiconductor manufacturing lithography of flexible automotive assembly lines.

M E 383M Heat Transfer in Industrial Systems (3 Credit Hours)

This course will provide engineers with a deeper understanding of heat transfer physics and the tools to analyze a wide range of industrially relevant heat transfer problems. Engineers will develop the skills to analyze heat transfer systems associated with a diversity of industrial applications and will learn how to use order of magnitude analysis to simplify complex problems and solution techniques for the three modes of heat transfer.

M E 385M Applied Thermodynamics (3 Credit Hours)

This course addresses the design and analysis of systems in which thermodynamic processes are central to function and performance. Fundamental thermodynamic concepts, such as enthalpy, entropy, energy, 1st & 2nd law, psychrometrics and combustion, will be reviewed. Practical topics, such as system-level thermodynamic processes for automotive engines, power plants, renewable energy production and HVAC systems, will be discussed in detail. Real-world examples will be given to cultivate skills of solving problems with basic knowledge of thermodynamics.

M E 391M Introduction to Manufacturing Systems (3 Credit Hours)

With an emphasis on continuous flow manufacturing, this course will provide engineers with

the knowledge and skillset to effectively analyze and design production systems to decrease manufacturing costs, decrease defects, and shorten delivery time by reducing process cycle times.

M E 389M Materials Science and Engineering (3 Credit Hours)

This course will go into detail about principles, advantages, and problems of solid, liquid, and vapor materials processes. Students will study considerations of structural alloys, ceramics, engineering polymers, and composites.

M E 387M Introduction to Automatic Control (3 Credit Hours)

The concept of feedback is central in the study of systems and control. Feedback loops are common in nature, even in the most basic biological phenomena from the macroscopic (i.e. population dynamics, climate, etc.) to microscopic (i.e. regulation of glucose levels, temperature regulation, etc.) scales. In engineering, feedback plays a critical role in mechanical, electronic, chemical and digital systems. More generally, systems theory and feedback are central to understanding, analyzing, and designing systems with interconnected components. It is important to understand not only if a system can be controlled, but in what frequency range and under what conditions.

The purpose of this class will be to gain a basic intuition for and understanding of linear feedback systems and develop the mathematical tools to understand the basics of design and analysis of single-input single-output feedback control systems. This class will build on the system modeling skills developed in previous courses in order to better understand how to control a system's behavior.

M E 390M Engineering Economics (3 Credit Hours)

Students are introduced to the fundamental topics of engineering economics, notions of risk and decision-making under conditions of risk and uncertainty, with applications to engineering design, business operations and planning.

M E 386M Modeling, Simulation, and Control of Physical Systems (3 Credit Hours)

This course reviews principles used to understand and model physical systems and introduces methods for building mathematical and simulation models of engineering systems. Emphasis is placed on development of dynamic system models for predicting the behavior or performance of systems, models for efficient data reduction or test development, models for design, and the role of models in control development. Bond graph methods are introduced especially for analysis of systems having combinations of mechanical, electrical, magnetic, electromechanical, fluid, and thermodynamic effects. The role and application of physical models in development and design of feedback controllers and estimation methods is also introduced. Applications from a broad area of engineering systems are used to motivate the topical discussion.

Faculty

Faculty Member

Vaibhav Bahadur, Ph.D.
Richard Crawford, Ph.D.
Dragan Djurdjanovic, Ph.D.
Bob Duvic, Ph.D.
Ofodike Ezekoye, Ph.D.
Raul Longoria, Ph.D.
Mitchell Pryor, Ph.D.
Yaguo Wang, Ph.D.
Michael Bryant, Ph.D.
James Mikulak, Ph.D.

Class

Fluid Mechanics in Industrial Processes
Product Design Lab
Statistical Methods for Process Control & Manufacturing
Engineering Economics
Heat Transfer in Industrial Systems (Director)
Modeling, Simulation & Control of Physical Systems
Introduction to Automatic Control
Applied Thermodynamics
Introduction to Manufacturing Systems
Materials Processing

Section VII: Electrical & Computer Engineering: Software Engineering
Program Specifics

ELECTRICAL & COMPUTER ENGINEERING: SOFTWARE ENGINEERING
Program Overview & Degree Requirements

Students in the SWE program are subject to all master's degree regulations as outlined in the Graduate Catalog, as well as all ECE departmental requirements. *In addition to maintaining a 3.0 GPA overall, students may apply only one course with a grade below 3.0 to the program of work requirement.* Upon completion of all the program requirements, which include 30 credit hours comprised of any ten 3-credit-hour courses offered by the program OR nine 3-credit-hour courses and a Master's Report, the student is awarded a Master of Science in Engineering (MSE) in the area of Electrical and Computer Engineering (EE), with a concentration in Software Engineering. All courses used to satisfy certificate requirements must be completed within a 5-year period.

Any combination of courses may meet program of work requirements.

Year One

Fall Semester

2 courses (6 Credit Hours)

Spring Semester

2 courses (6 Credit Hours)

Summer Semester

1 course (3 Credit Hours)

Year Two

Fall Semester

2 courses (6 Credit Hours)

Spring Semester

2 courses (6 Credit Hours)

Summer Semester

1 course (3 Credit Hours) OR
Master's Report (3 Credit Hours)

Courses

E E 379K Requirements Engineering: Acquisition and Modeling (3 Credit Hours)

This course will address theoretical and practical methods for acquiring and modeling requirements for various systems stakeholders. Topics will include methods and techniques for managing the acquisition process among distributed team members and distributed stakeholders, eliciting and verifying requirements as a function of the type of stakeholder, the types of requirements, and system development maturity, managing the requirements artifacts, constructing model-based representations of requirements, synthesizing requirements for various stakeholders, and analyzing and evolving model-based requirements.

E E 382C Software Architectures (3 Credit Hours)

The course will teach students about software architectures, architectural model specification techniques and analysis techniques offered by the research community as well as those architectures, model specifications and analytical methods commonly used in industry.

E E 382C.3 Verification and Validation (3 Credit Hours)

This course covers various traditional and state-of-the-art techniques for software validation, a process that includes reasoning about (the correctness of) programs and testing programs. The course content will include both techniques for dynamic analysis, such as glass-box and black-box testing, equivalence partitioning, test strategy and automation, regression testing and debugging, and techniques for static analysis, such as symbolic execution, and also techniques for software model checking including those that employ artificial intelligence based heuristics.

E E 382V: Engineering Dynamic Program Analysis (3 Credit Hours)

Dynamic analysis is commonly used to detect errors in software, including memory errors, concurrency errors (e.g., data races), performance issues, etc. Although valuable, dynamic analysis can be costly because the program execution needs to be (continuously) monitored to collect necessary data for the analysis. Additionally, naively engineered dynamic analysis can interfere with the program being analyzed, which can impact the conclusions of the analysis. The main goal for this course is to provide motivation for various dynamic analysis techniques, introduce popular tools that are frequently used to implement an efficient and effective dynamic analysis, and provide hands-on experience in developing dynamic analysis techniques.

E E 382V Parallel Algorithms (3 Credit Hours)

This is an introductory graduate course in parallel algorithms. It assumes undergraduate knowledge of sequential algorithms.

E E 382V Systems Programming (3 Credit Hours)

This is a computer systems course with an emphasis in software. The course will start with looking at tools like compilers, linkers, loaders, and debuggers that an operating system provides and how they work. We will explore the POSIX System-Call API that all modern operating systems implement with focus on processes, threads, i/o and inter-process-communication.

E E 382V Formal Methods in Distributed Systems (3 Credit Hours)

This course gives an introduction to the use of formal methods within the software design process. Specifically, this class will cover the application of models to distributed and concurrent systems. Modern software systems are commonly highly distributed, and this added sophistication further complicates software design. The rigor offered by formal methods aims to make the process more precise.

E E 382V Advanced Programming Tools (3 Credit Hours)

Programming is difficult- using the right tools can solve these problems. Examples include tools for version control, documentation, program building and configuration, automatic testing, program analysis, and integrated development. Our approach will be to introduce a specific problem, show how a tool can solve the problem, and then develop the technical principles underlying the tool. We will have written homework problems as well as coding exercises for each concept. The class will have a major design project that will begin at the start of the term. Use of the tools will be a required part of the project. We will use open-source tools to illustrate these concepts. The specific tool stack is described in the lectures section of this

document. I selected these tools based on my experience at Google; they also power many state-of-the-art commercial projects.

E E 382V Data Engineering (3 Credit Hours)

Course Description – Data Engineering is concerned with the role of data in the design, development, management, and utilization of complex computing/information systems. Issues of interest include database design; meta knowledge of the data and its processing; languages to describe data, define access, and manipulate databases; strategies and mechanisms for data access, security, and integrity control.

E E 382V Mobile Computing (3 Credit Hours)

As mobile computing devices like laptops, PDAs, cellular phones, and even miniature sensors become increasingly pervasive, the demand for applications for this novel environment escalates. This course explores the effects of mobile computing on software design and development. The approach taken uses current research projects in the field of mobile computing to highlight the key aspects that complicate software engineering. We will focus on these concerns in the context of application development.

E E 382V Social Computing (3 Credit Hours)

This is an introductory course on social networks, markets and Internet computing. The emphasis of this course is on algorithms where multiple agents interact with each other. The following topics will be covered in the course: Matching Bipartite Matching, online matching, Hungarian algorithm, Auction-based algorithm Stable Matching: Optimal matching, enumerating all matchings, Kidney-Exchange Auctions: First-price, Second-Price Auctions, VCG Mechanisms Games Mixed strategies, Nash Equilibrium, Pareto Optimality, Social Optimality Voting: majority rules, positional voting, Arrow's Theorem Experts Algorithm: Multiplicative Updates Method P2P Computing: Consistent Hashing Streaming Algorithms: Sketches, Bloom Filter, Heavy Hitters Privacy and Authentication: Public Key Cryptography.

E E 382V Software Testing (3 Credit Hours)

This course first introduces the basics of software testing theory and practice, and then presents some recently developed techniques for systematically finding bugs in programs and improving their reliability. Learning the techniques and tools presented in this course is likely to significantly increase the students' productivity as software developers and testers, and improve the quality of the code they develop.

E E 380L Data Mining (3 Credit Hours)

Basic concepts of data mining, in parallel with a practical track involving hands-on experience with industrial strength software and a term project will be covered.

E E 382N Communication Networks: Tech/Arch/Protocol (3 Credit Hours)

This is an introductory course in Computer Networking. It covers all basic components of modern networks, including: link level technologies such as Ethernet, token rings, and wireless Ethernet; switching technologies such as bridges and ATM; internetworking including IP; the transport layer, including TCP and RPC; and congestion control. Time permitting, we will also

consider security, quality of service, high-performance networks, and/or multimedia. Although IP and TCP are primary examples used in the course, it is NOT a course on TCP/IP!

E E 382N.11 Distributed Systems (3 Credit Hours)

This course will expose students to the theoretical and practical aspects of designing distributed systems such as: Datagram Sockets, TCP sockets, Java RMI, Map Reduce Abstraction, Models of Distributed Computation, Logical clocks, vector clocks, Resource Allocation, Drinking Philosophers, Global Property Evaluation, Snapshots, Unstable properties, Ordering of Messages, Elections, Spanning Trees, Synchronizers, Consensus, Byzantine Agreement, and Self-stabilizing algorithms.

E E 382N.4 Advanced Embedded Microcontroller Systems (3 Credit Hours)

Hardware and software design of microcontroller systems; applications, including communication systems; object-oriented and operating systems approaches to interfacing and resource management.

E E 382C.16 Distributed Information System Security (3 Credit Hours)

Intended to acquaint the student with the analysis and engineering techniques employed in securing today's networked information system environment. Emphasis is placed on examination of practical security threats, exposures in distributed systems and the technology that is being applied and developed as countermeasures.

E E 382C System Engineering Program Management and Evaluation (3 Credit Hours)

Management, engineering, and evaluation approaches applicable to a spectrum of software development programs is taught. General guidelines, metrics, program artifacts, and processes will be discussed in conjunction with case studies.

E E 382C.12 Multicore Computing (3 Credit Hours)

This course will expose students to the theoretical and practical aspects of designing multicore software systems such as: programming constructs for concurrent computation, openMP, sequential consistency, linearizability, lock-based synchronization, lock-free synchronization, wait-free synchronization, consensus number, software transactional memory, testing and debugging parallel programs, race detection, concurrent data structures such as stacks, queues, linked lists, hash tables and skiplists, and model checking of concurrent programs.

E E 382 Computer Graphics (3 Credit Hours)

This is an introductory course on the major topics in computer graphics including image synthesis, interactive techniques, geometric modeling, and computer-based animation. Covered material includes: OpenGL programming, principles of operation of raster graphics systems, sampling and antialiasing, homogeneous coordinate transformation techniques, parallel and central projection and perspective transformations, hidden surface removal, light and reflectance models for local and global illumination, shading techniques, ray tracing, basic object modeling techniques, visual perception and basic color theory, hierarchical modeling, and basic animation.

E E 382 Middleware (3 Credit Hours)

This course is a graduate level course introducing and investigating middleware at all levels, largely from a software engineering perspective. Students are introduced to various types of middleware (from object-oriented middleware to message-oriented middleware and beyond) both through lecture materials and through active "mini-projects" through which the students build complex applications using existing middleware solutions. The course also offers lectures on "trends" in middleware, including how middleware addresses challenges related to mobile computing, sensor networks, real-time computing, "green computing," etc.

E E 382 Algorithmic Foundations for Software Systems (3 Credit Hours)

We will begin by reviewing foundations of discrete mathematics. We will then study measuring program performance using the big-O notation. Following this, we will study fundamental data structures and their associated algorithms; specifically, we will cover lists, arrays, queues, stacks, hash tables, sets, binary trees, and graphs. We will then focus on general algorithm design principles, such as greedy approaches and dynamic programming. Our last topic will be matrix algorithms.

The principle focus of the lectures will be on theoretical aspects. There will also be a number of programming assignments that will require implementing and testing algorithms. In addition, there will be a team project that either evaluates some textbook algorithm(s) in real-world settings, or explores how to specialize and enhance some textbook algorithm(s) under specific conditions.

E E 381V Introduction to Optimization (3 Credit Hours)

This course will serve as an introduction to modeling, applications and algorithms of discrete and continuous optimization. The students will learn how to model the real world within the paradigms of linear programming, mixed integer linear programming, and more general convex optimization. We will emphasize interesting applications where these classes have had impact in industry, including applications in data mining and machine learning (no prior knowledge of Machine Learning is required).

E E 398R Master's Report (3 Credit Hours)

Completion of report in the last semester enrolled in the program to fulfill the requirement for the master's degree. Offered on the credit/no credit basis only. Prerequisite: Graduate standing in electrical engineering and consent of the graduate adviser.

E E 382V Advanced Algorithms (3 Credit Hours)

This course introduces students to advanced techniques for the design and analysis of algorithms. It is intended to be a follow-up to the course "Algorithmic Foundations for Software Systems," students must be comfortable with the topics covered in that course. The topics and applications tentatively planned to cover include: approximation algorithms (set cover, steiner tree and TSP, multiway cut, knapsack, minimum makespan scheduling), lattice-theoretic algorithms, LP-Based algorithms (LP Duality, set cover via dual fitting, LP rounding techniques, facility location), randomized algorithms (min-cut, maximal independent set, leader election, graph coloring) and game theory.

E E 379K Programming Paradigms (3 Credit Hours)

There are hundreds of programming languages out there and many of them bring several unique language features that should help developers to write correct software faster. This course will study several programming languages (including C, C++, Java, OCaml, etc.) and some of the unique features that are introduced to increase developers' productivity. The course will also explore how software engineering practices differ across languages and the set of design patterns for each language. Moreover, unique language features have impact on how developers organize, write, test, and analyze code; we will introduce and discuss several of these aspects.

Faculty

Faculty Member

Ramesh Yerraballi, Ph.D.

K. Suzanne Barber, Ph.D.

Bill Bard, M.S.

Vijay Garg, Ph.D.

Constantine Caramanis, Ph.D.

Christine Julien, Ph.D.

Sarfraz Khursid, Ph.D.

Daniel Miranker, Ph.D.

Bruce McCann, Ph.D.

Adnan Aziz, Ph.D.

Class

Communication Networks

Requirements Engineering; Software Architecture

Communication Networks: Tech/Arch/Protocol; Distributed Information System Security

Distributed Systems (Director)

Data Mining

Advanced Topics I and II summer course

Verification and Validation; Software Testing

Data Engineering

System Engineering Program Management and Evaluation

Advanced Topics I and II summer course

Section VIII: Graduate Stackable Certificates Specifics

MECHANICAL ENGINEERING: CONTROLS GRADUATE CERTIFICATE

Program Overview & Requirements

Students in the Mechanical Engineering: Controls Graduate Certificate are subject to GPA requirements of a “C” or higher. All courses used to satisfy certificate requirements must be completed within a 5-year period. Limitations on applying certificate credit to a future degree follows the University of Texas at Austin standard of a 5-year limit.

Each semester-based course is delivered entirely online. Student registration for courses counting toward this certificate must be via Texas Engineering Executive Education. All classes are eligible for transcript credit. Any courses in the certificate that were previously taken before enrollment in the program must be re-taken.

The cost for each course in this certificate is \$4,000.

The program requires the completion of 9 semester credit hours of coursework, which can be completed in as little as 1 calendar year. Upon completion of the Graduate Certificate and admission into the degree program, the following 9 credit hours can be applied to the ME Option III Master's Degree:

- ME 386M Modeling, Simulation, and Control of Physical Systems (3 Credit Hours)
 - Fall
- ME 381M Statistical Methods for Process Control and Manufacturing (3 Credit Hours)
 - Spring
- ME 387M Introduction to Automatic Control (3 Credit Hours)
 - Spring

Students are permitted to complete the program without consecutive enrollment, permitted they complete all courses within the 5-year limit for this certificate.

Courses

M E 381M Statistical Methods for Process Control & Manufacturing (3 Credit Hours)

This course covers fundamental methods for statistical monitoring of processes, including Shewhart control charts, control charts for individual measurements, CUSUM charts and attribute control charts. In addition, design of experiments, including the statistical evaluation of main and interaction effects, as well as intelligent experimentation through reduced factorial experimental design, will be taught. DOE-based search techniques for surface response based design optimization will also be outlined. Finally, a lecture will be offered on advanced research in model based and active process control in highly flexible and sophisticated manufacturing systems, such as semiconductor manufacturing lithography of flexible automotive assembly lines.

M E 386M Modeling, Simulation, and Control of Physical Systems (3 Credit Hours)

This course reviews principles used to understand and model physical systems and introduces methods for building mathematical and simulation models of engineering systems. Emphasis is placed on development of dynamic system models for predicting the behavior or performance of systems, models for efficient data reduction or test development, models for design, and the role of models in control development. Bond graph methods are introduced especially for analysis of systems having combinations of mechanical, electrical, magnetic, electromechanical, fluid, and thermodynamic effects. The role and application of physical models in development and design of feedback controllers and estimation methods is also introduced. Applications from a broad area of engineering systems are used to motivate the topical discussion.

M E 387M Introduction to Automatic Control (3 Credit Hours)

The concept of feedback is central in the study of systems and control. Feedback loops are common in nature, even in the most basic biological phenomena from the macroscopic (i.e. population dynamics, climate, etc.) to microscopic (i.e. regulation of glucose levels, temperature regulation, etc.) scales. In engineering, feedback plays a critical role in mechanical, electronic, chemical and digital systems. More generally, systems theory and feedback are central to understanding, analyzing, and designing systems with interconnected components. It is important to understand not only if a system can be controlled, but in what frequency range and under what conditions.

The purpose of this class will be to gain a basic intuition for and understanding of linear feedback systems and develop the mathematical tools to understand the basics of design and analysis of single-input single-output feedback control systems. This class will build on the system modeling skills developed in previous courses in order to better understand how to control a system's behavior.

Faculty**Faculty Member**

Dragan Djurdjanovic, Ph.D.

Raul Longoria, Ph.D.

Mitchell Pryor, Ph.D.

Class

Statistical Methods for Process Control & Manufacturing

Modeling, Simulation & Control of Physical Systems

Introduction to Automatic Control

PETROLEUM ENGINEERING: DATA ANALYTICS GRADUATE CERTIFICATE

Program Overview & Requirements

Students in the Petroleum Engineering: Data Analytics Graduate Certificate are subject to GPA requirements of a “C” or higher. All courses used to satisfy certificate requirements must be completed within a 5-year period. Limitations on applying certificate credit to a future degree follows the University of Texas at Austin standard of a 5-year limit.

Each semester-based course is delivered entirely online. Student registration for courses counting toward this certificate must be via Texas Engineering Executive Education. All classes are eligible for transcript credit. Any courses in the certificate that were previously taken before enrollment in the program must be re-taken.

The cost for each course in this certificate is \$3,750.

The program requires the completion of 9 semester credit hours of coursework, which can be completed in as little as 1 calendar year. The following 9 credit hours are required for certificate completion:

- PGE 383.64 High Performance Computing for Engineers (3 Credit Hours)
- PGE 383.63 Subsurface Machine Learning (3 Credit Hours)
- PGE 383.66 Data Analytics and Geostatistics (3 Credit Hours)

Students are permitted to complete the program without consecutive enrollment, permitted they complete all courses within the 5-year limit for this certificate.

Courses

PGE 383.66 Data Analytics and Geostatistics (3 Credit Hours)

This course is a comprehensive treatment of subsurface data analytics and geostatistics, building from fundamental probability and statistics, univariate and multivariate analysis, representative sampling, spatial characterization and modeling, uncertainty management through to decision making in the presence of uncertainty. Upon completion of the course the student will be ready to utilize subsurface data to support development decision making.

PGE 383.63 Subsurface Machine Learning (3 Credit Hours)

The theory and practice of data analytics and machine learning for subsurface resource modeling. Course will build from the ground up covering fundamental probability and statistics; data preparation and feature engineering, inference (clustering, multidimensional scaling) and prediction (regression, naïve Bayes, decision trees, random forest, support vector machines and artificial neural nets); and model selection, training, testing, tuning and validation.

PGE 383.64 High Performance Computing for Engineers (3 Credit Hours)

Course will introduce the student to the UNIX environment in a high performance scientific computing context and include instruction on several important UNIX applications that will make users more productive. Course will also cover, at an introductory level, the differences between

various parallelization styles of computing and develop a basic working understanding of how to utilize the application programming interfaces (APIs) in scientific applications.

Faculty

Faculty Member

Michael Pyrcz, Ph.D.
Michael Pyrcz
John Foster

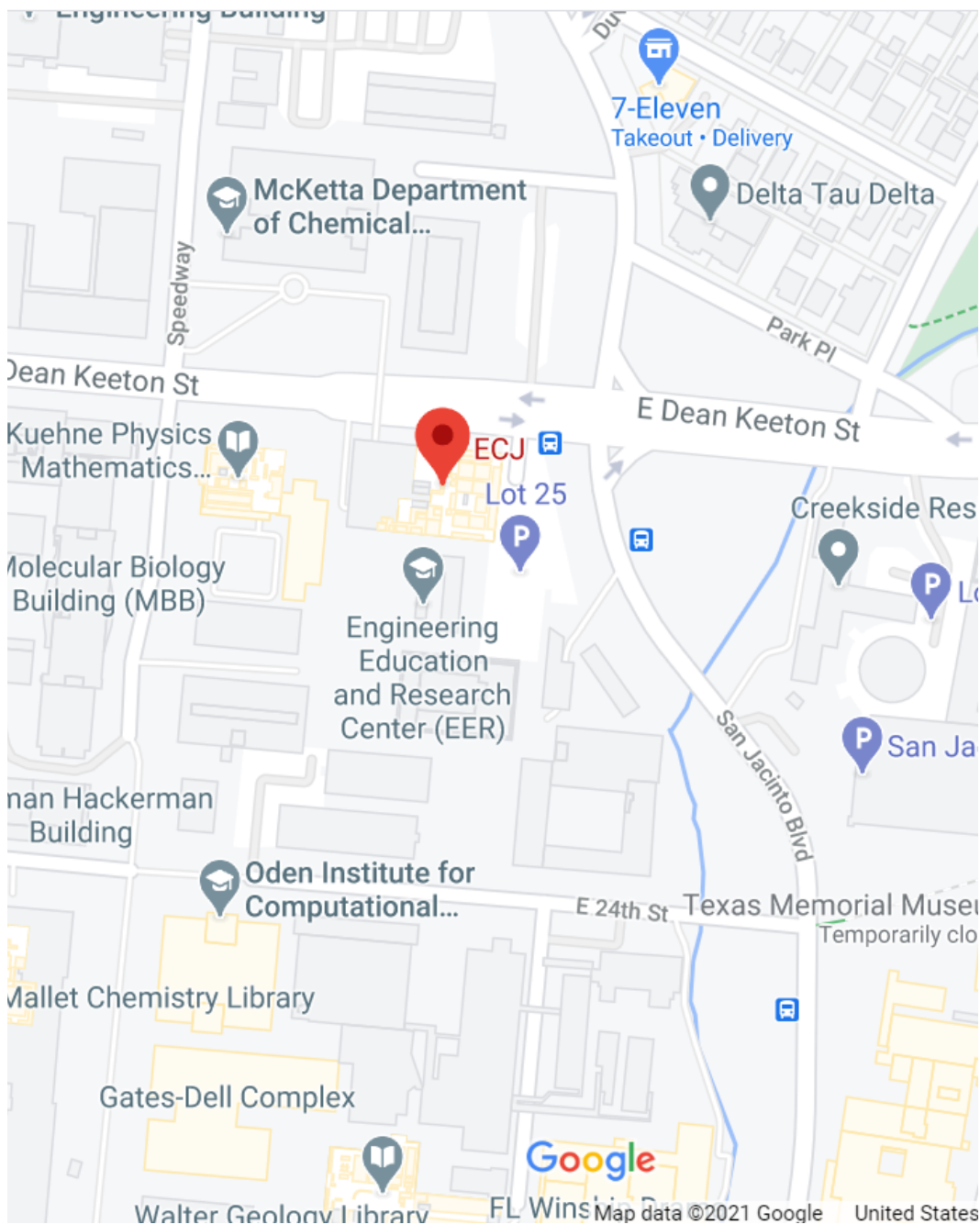
Class

Data Analytics and Geostatistics
Subsurface Machine Learning
High Performance Computing for Engineer

Section IX: Useful Resources

CLASS LOCATION MAP

Ernest Cockrell Jr. Hall (ECJ)



Campus Map & Building Index

The UT campus is changing fast! Please visit <https://maps.utexas.edu/#/utm> for the most up-to-date map of University buildings.

Useful Websites and Phone Numbers

Academic Computing and Instructional Technology Services	512.475.9300
Campus Computer Center, http://www.computerstore.utexas.edu/new/	512.471.6550
Canvas, http://canvas.utexas.edu/	
Cockrell School of Engineering, http://engr.utexas.edu	
Dean of Student, http://deanofstudents.utexas.edu/	512.471.1201
Engineering Career Assistance Center, http://www.engr.utexas.edu/ecac	512.471.1915
Engineering Software, http://www.engr.utexas.edu/itg/products	512.232.2486
General Information and Referral Service	512.475.7644
Grades, http://registrar.utexas.edu/students/grades/	
Graduate Admissions (GIAC), http://www.utexas.edu/student/admissions/	512.475.7399
Longhorn Athletics, http://www.texassports.com/	
My Tuition Bill, https://utdirect.utexas.edu/acct/fb/my_tuition/my_tuition_home.WBX	
International Students Office, http://world.utexas.edu/	512.471.1211
Office of Graduate Studies, http://www.utexas.edu/ogs/	512.471.4511
Ombudsperson, http://www.utexas.edu/student/ombuds/	512.471.3825
Rec Sports, http://www.utrecsports.org/	
Sanger Learning Center, https://ugs.utexas.edu/slc/grad	512.471.3614
Student Financial Services, http://finaid.utexas.edu/	512.475.6200
Student Veteran Services, http://deanofstudents.utexas.edu/veterans/contact.php	512.232.2835
Texas Engineering Executive Education, http://uteng.org	512.471.3506
Texas Performing Art, https://texasperformingarts.org/	512.471.2787
The University of Texas at Austin Main Switch Board	512.471.3434
Transcript Services, http://registrar.utexas.edu/transcripts	512.475.7575
University Health Center, http://healthyhorns.utexas.edu/	512.471.4955
UT Direct, https://utdirect.utexas.edu/utdirect/index.WBX	
UT General Libraries, http://www.lib.utexas.edu/	512.495.4348
UT Library Reference & Information Services	512.495.4250
Veterans and Certification Services	512.475.7575
What I Owe, https://utdirect.utexas.edu/acct/rec/wio/wio_home.WBX	