TEXAS A&M UNIVERSITY

Construction Engineering and Management Graduate Student Handbook

Zachry Department of Civil Engineering

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Overview

Program Overview

The Construction Engineering and Management program develops knowledge, tools, and methods for adding value to construction projects and organizations. The program integrates three themes in its research and teaching focus:

- development processes and management issues that drive and constrain progress, including the dynamics of rework, dysfunctional management teams, procurement process selection, fast-track implementation, and resource allocation;
- risks that threaten performance, including implementable quantitative assessment, performance prediction and control under uncertainty, real options in construction, and risk management decision-making;
- means of improving construction, including advanced materials, integrated modeling of processes and management, and information technology.

Construction engineering and management faculty apply a variety of research methods to these issues to build and test potential theories with data. For example, statistical models of dependence among construction phases and activities illuminate the effects of project structure on contingencies. Advanced construction materials are used to build and describe the behavior of structural members in laboratories. Controlled experiments with human subjects describe how managers assess and choose risk strategies for comparison with results from computer models based on theories from finance and economics. Surveys of experts and direct observations of construction operations form the basis for new processes and practices. Interviews of practitioners about project management policies are integrated with dynamic simulation models of rework and quality to analyze resource allocation efficiencies.

Relevant Faculty Members

Administration

Department Head:	Robin Autenrieth
Associate. Dept. Head:	Yunlong Zhang (graduate)
Division Head:	Peter Keating
(Construction, Geotechnical, & Structures)	

Construction Engineering and Management Faculty

Name	Phone	Email
Anderson, Stuart	979-845-2407	stuarta@civil.tamu.edu
Damnjanovic, Ivan	979-862-6616	idamnjanovic@civil.tamu.edu
Ford, David*	979-845-3759	dford@civil.tamu.edu
Reinschmidt, Kenneth (Emeritus)	979-845-8599	kreinschmidt@civil.tamu.edu
Walewski, John	979-862-5687	jwalewski@civil.tamu.edu

* Graduate Student Advisor

Construction Engineering and Management Core Courses

Course No.	Course Name	Instructor	Typ. Sem. Taught
CVEN 638	Computer Integrated Construction Engineering Systems	Walewski	Fall
CVEN 644	Project Risk Management	Damnjanovic	Fall
CVEN 654	Strategic Construction and Engineering Management	Ford	Fall
CVEN 668	Advanced EPC Project Development	Anderson	Fall
CVEN 640	Project Development: Methods and Models	Damnjanovic	Spring
CVEN 641	Construction Engineering Systems	Anderson	Spring
CVEN 689	Highway Project Development and Project Management	Anderson	Spring
CVEN 710	Engineering Project Finance	Damnjanovic	Spring
CVEN 717	Engineering Project Controls	Ford	Spring

Not every course on this list will be taught every year. However, the courses above will be typically (but not always) taught in semester indicated. Use the Texas A&M "Howdy" web based system to identify which courses will be offered in which semesters.

Degree Programs

Degree of Master of Engineering

A minimum of 30 semester credit hours of approved courses is required for the Master of Engineering degree (MEng). The university places limitations on these credit hours. A complete discussion of all university requirements is found in the current Texas A&M University Graduate Catalog (available on the Internet at http://www.tamu.edu/admissions/catalogs/) under the heading "The Degree of Master of Engineering." In addition to the University requirements, the Department of Civil Engineering also has limitations on credit hours for the MEng program. These requirements can be found at: https://www.civil.tamu.edu/downloads/GraduateInfo/CE-ME.pdf. Finally, the requirements of the construction engineering and management MEng program listed below are also in addition to the University and Department requirements.

A. Advising Committee

The Master of Engineering program has a single advisor or chair. Students are initially assigned the CEM graduate student advisor (Dr. Ford) as an advisor, who will subsequently assign each student a chair from the CEM faculty. No external members are required for this degree plan.

B. Prerequisites

All of the following courses are considered prerequisites to the MEng program of study in construction engineering and management (CEM): CVEN 349, CVEN 405, CVEN 473, or equivalents that are approved by the CEM Graduate Advisor. Courses listed for which a student lacks credit must be completed, but those credits cannot be applied toward the 30 semester credit hour requirement. Pre-requisite coursework must be completed during your first semester at Texas A&M University, as they are pre-requisites for all CEM graduate courses.

C. Degree Plans

A standard degree plan has been devised for all Master of Engineering Students. In addition, two one year programs have been developed to support industry needs in the heavy civil engineering sector of construction. Courses may only be changed to the prescribed alternates by the approval of the student's advisor (chair).

Enter and submit your proposed degree plan on the internet at http://ogs.tamu.edu/ electronically to your graduate advisor for their electronic approval. Master of Engineering students must submit their degree plan by the middle of their second semester after starting their coursework. The office of graduate studies blocks students from further registration if a

degree plan is not filed *before the end of their second semester of study*. If you are blocked, you are not considered a full time student and become ineligible to receive any assistantship.

1. Standard Degree Plan – ME Students

Core Courses (must have 18 credit hours from courses below)

Course No.	***Course Name***	***(Instructor)***
CVEN 638	Computer Integrated Construction Engineering Systems	(Walewski)
CVEN 640	Project Development: Methods and Models	(Damnjanovic)
CVEN 641	Construction Engineering Systems	(Anderson)
CVEN 644	Project Risk Management	(Damnjanovic)
CVEN 654	Strategic Construction and Engineering Management	(Ford)
CVEN 668	Advanced EPC Project Development	(Anderson)
CVEN 689	Highway Project Development and Project Management	(Anderson)
CVEN710	Engineering Project Finance	(Damnjanovic)
CVEN 717	Engineering Project Controls	(Ford)

Not every course on this list will be taught every **year. The student must confirm the availability of these courses when preparing a degree plan.** Core Courses" above. Use the "Howdy" web based system to identify which courses will be offered in which semesters. If courses are not offered during your enrollment period and only if this prevents you from completing the required 18 credit hours by the time all course requirements can be met, replacement course(s) must be selected from courses listed in "Additional Coursework." The student's advisor must approve these courses.

The student's advisory chair, in consultation with the student, will select a minimum of 12 additional semester credit hours of coursework to complement the overall objectives of the proposed degree plan (see requirements below). Depending on the degree plan, a *maximum* of 3 semester credit hours of CVEN 685, Directed Study, can be applied toward this requirement. The use of CVEN 685 credits for the proposed degree plan requires formal approval of the student's graduate advisor. Note that there is no minimum requirement for CVEN 685 credit. Further, depending on the degree plan, a *maximum* of two semester credit hours of CVEN 684, Professional Internship, can be applied toward this requirement. The use of CVEN 684 credits for the proposed degree plan requires formal approval of the student's graduate advisor, including objectives for the internship. A maximum of 12 credit hours of 689 courses are allowed.

Additional Coursework (minimum of 12 semester credit hours):

The following courses are the approved electives for the ME degree plan. You must choose one elective from the following [note not all courses may be offered]:

- CVEN – Any graduate course with the approval of the CEM Advisor with the following courses recommended:
    - CVEN 612 – Micromechanics of Civil Engineering Materials
    - CVEN 614 – Stabilization of Soil-Aggregate Systems
    - CVEN 615 – Structural Design of Pavements
    - CVEN 618 – Traffic Engineering: Operations
    - CVEN 622 – Properties of Concrete
    - CVEN 624 – Infrastructure Engineering and Management
    - CVEN 626 – Roadside Safety Design
    - CVEN 635 – Street and Highway Design
    - CVEN 637 – Rigid Pavement Analysis and Design
    - CVEN 646 – Geotechnical Site Investigation
    - CVEN 649 – Physical and Engineering Properties of Soil
    - CVEN 653 – Bituminous Materials
    - CVEN 658 – Civil Engineering Applications of GIS
    - CVEN 659 – Behavior and Design of Steel Structures
    - CVEN 667 – Slope Stability and Retaining Walls
- CVEN 684 – Professional Internship (approval required)
- CVEN 685 – Directed Studies (approval required)
- STAT 601 – Statistical Analysis
- ISEN 689 Theory of Socio-Technical Systems
- ISEN 625 – Simulation Methods and Applications
- ISEN 627 – Engineering Analysis of Decision Making
- ISEN 663 – Engineering Management Control Systems
- ISEN 667 – Engineering Economy
- COSC 628 – Applications of Construction Law
- COSC 463 – Construction Law and Ethics (summer only with advisor approval)
- MGMT 655* – Survey of Management
- ACCT 640* – Accounting Concepts and Procedures
- FINC 635* – Financial Management for Non-Business
- MKTG 621* – Survey of Marketing

NOTES:
1) One-third of the required 30 credit hours of coursework must be taken in fields ***outside*** of the major field. For the purposes of meeting this requirement "outside of the major field" means not directly related to construction engineering and management.
2) Only two of the four courses marked with an asterisk (*) may be included in a degree plan.

2. *One Year Construction Engineering Degree Plan – ME Students*

Core Courses (must have 15 credit hours from courses below)

Course No. ***Course Name*** ***(Instructor)***

CVEN 638 Computer Integrated Construction Engineering Systems (Walewski)
CVEN 668 Advanced EPC Project Development (Anderson)
CVEN 640 Project Development: Methods and Models (Damnjanovic)
CVEN 641 Construction Engineering Systems (Anderson)
CVEN 644 Project Risk Management (Damnjanovic)
CVEN 717 Engineering Project Controls (Ford)

Not every course on this list will be taught every year. The student must confirm the availability of these courses when preparing a degree plan. See "Construction Engineering and Management, Core Courses" above. Use the "Howdy" web based system to identify which courses will be offered in which semesters. It is recommended that the degree plan be prepared in the first semester of the student's program. Additional graduate level courses are offered through the department and may be used to satisfy the elective coursework requirement with approval of the student's advisor.

Elective Coursework (minimum of 15 semester credit hours):

The following courses are the approved electives for the ME degree plan under the Construction Engineering option. You must choose elective courses from the following list [note not all courses may be offered]:

- CVEN 615 – Structural Design of Pavements
- CVEN 621 – Advanced Reinforced Concrete Design
- CVEN 635 – Street and Highway Design
- CVEN 641 – Construction Engineering Systems
- CVEN 644 – Project Risk Management
- CVEN 654 – Strategic Construction and Engineering Management
- CVEN 658 – Civil Engineering Applications of GIS

- CVEN 659 – Behavior and Design of Steel Structures
- CVEN 667 – Slope Stability and Retaining Walls
- CVEN 671 – Design and Behavior of Prestressed Concrete Structures
- CVEN 668 – Marine Dredging
- CVEN710 Engineering Project Finance
- COSC 631 – Supervision of Construction Workforce or COSC 664 Construction Safety Management (but not both COSC Courses)
- COSC 628 Applications of Construction Law

3. One Year Construction Project Management Degree Plan

Core Courses (must have 16 credit hours from courses below)

Course No.	***Course Name***	***(Instructor)***
CVEN 640	Project Development: Methods and Models	(Damnjanovic)
CVEN 641	Construction Engineering Systems	(Anderson)
CVEN 644	Project Risk Management	(Damnjanovic)
CVEN 654	Strategic Construction and Engineering Management	(Ford)
CVEN 717	Engineering Project Controls	(Ford)

Not every course on this list will be taught every year. The student must confirm the availability of these courses when preparing a degree plan. See "Construction Engineering and Management, Core Courses" above. Use the "Howdy" web based system to identify which courses will be offered in which semesters. It is recommended that the degree plan be prepared in the first semester of the student's program. Additional graduate level courses are offered through the department and may be used to satisfy the elective coursework requirement with approval of the student's advisor.

Elective Coursework (minimum of 14 semester credit hours):

The following courses are the approved electives for the ME degree plan under the construction project management option. You must choose elective courses from the following list [note not all courses may be offered]:

- CVEN 638 – Computer Integrated Construction Engineering Systems
- CVEN 668 – EPC Advanced Project Development
- CVEN 689 – Engineering Risk Analysis
- MGMT 655 – Survey of Management
- FINC 635 – Financial Management for Non-Business

- COSC 628 – Applications of Construction Law or COSC 648 Design-Build Project Delivery (but not both COSC Courses)

D. Writing Requirement and Waiver of Final Exam

The University has a writing requirement for all graduate degrees. You will be writing a report as part of your MEng degree effort that will be used to satisfy this requirement. Discuss the specific requirements of this report with your advisor and submit it to your advisor.

At the same time you submit your report(s), you should submit your request for the Waiver of Final Exam form (if you wish to forgo the exam), which is available online through Office of Graduate Studies. Once your report has been reviewed and certified to meet the writing requirements, the waiver form will be signed.

You must provide a minimum of 2 weeks for the review of the report and for the form to be signed. Failure to do so may delay your graduation. It is your responsibility to ensure enough time is provided in order to meet the deadlines by the university's Office of Graduate Studies (http://ogs.tamu.edu/).

Degree of Master of Science

The Master of Science degree is a research-oriented degree requiring coursework and research. The degree also requires the student to complete and submit a thesis to the University. A minimum of 32 semester credit hours of approved courses is required for the Master of Science degree (MS). At least 25 semester credit hours must be coursework. The university places limitations on these credit hours. A complete discussion of all university requirements is found in the current Texas A&M University Graduate Catalog (available on the Internet at http://www.tamu.edu/admissions/catalogs/) under the heading "The Degree of Master of Science. For example, university requirements include a final examination and submission of a thesis to the university. In addition to the University requirements, the Department of Civil Engineering also has limitations on credit hours for the MS program. These requirements can be found at: https://www.civil.tamu.edu/downloads/GraduateInfo/CE-MS.pdf. Finally, the requirements of the construction engineering and management MS program listed below are also in addition to the University and Department requirements.

Advising Committee

The Master of Science program requires that the student have an advising committee consisting of at least a single chair from among the CEM faculty. Other requirements are available from the Zachry Department of Civil Engineering graduate student office.

A. Degree Plan

The student must identify their research supervisor before the start of their second semester of study, at which point an advisory committee will be formed. The student's advisory committee, in consultation with the student, will develop the proposed degree plan. The proposed degree plan must be typed on the official form as it appears on the Internet at http://ogs.tamu.edu/ and submitted electronically to your graduate committee chair and advisory committee members for their electronic endorsement. The office of graduate studies blocks students from further registration if a degree plan is not filed *before the end of their second semester of study*. If you are blocked, you are not considered a full time student and become ineligible to receive any assistantship.

B. Prerequisites

All of the following courses are considered prerequisite to the MS program of study in construction engineering and management: CVEN 349, CVEN 405, CVEN 473, or equivalents that

are approved by the CEM Graduate Advisor. Courses listed for which a student lacks credit must be completed in the first semester at Texas A&M, but those credits cannot be applied toward the 32 semester credit hour requirement. Note that you may have been required to complete additional pre-requisites as part of your admission into the program. Those classes also cannot be applied towards the degree credit hour requirement.

C. Required Coursework (16 semester credit hours):

Core Courses (must have 16 credit hours from courses below)[1]

Course No. ***Course Name*** ***(Instructor)***

CVEN 638 Computer Integrated Construction Engineering Systems (Walewski)
CVEN 640 Project Development: Methods and Models (Damnjanovic)
CVEN 641 Construction Engineering Systems (Anderson)
CVEN 644 Project Risk Management (Damnjanovic)
CVEN 654 Strategic Construction and Engineering Management (Ford)

Not every course on this list will be taught every year. The student must confirm the availability of these courses when preparing a degree plan. Use the "Howdy" web based system to identify which courses will be offered in which semesters. If courses are not offered during your enrollment period, replacement courses must be selected from CEM Courses listed under Additional Coursework – CEM Courses. The student's committee must approve these courses.

Elective Coursework (16 semester credit hours):

The student's advisory committee, in consultation with the student, will select a minimum of 16 additional semester credit hours of coursework to complement the overall objectives of the proposed degree plan. A maximum of 7 semester credit hours of CVEN 691 Research can be applied toward this requirement.

CEM Courses:

CVEN 644 Project Risk Management (Damnjanovic)
CVEN 668 Advanced EPC Project Development (Anderson)
CVEN 689 Highway Project Development and Project Management (Anderson)
CVEN710 Engineering Project Finance (Damnjanovic)
CVEN 717 Engineering Project Controls (Ford)

Non-CEM Courses

CVEN 691 Research (up to a maximum of 7 credit hours to support Thesis)

CVEN Any graduate course with the approval of the student's advisory committee (see list under standard ME degree)
STAT 601 Statistical Analysis
STAT 602 Statistical Methods of Regression Analysis
STAT 606 Design of Experiments
STAT 607 Sampling
STAT 608 Least Squares and Regression Analysis
STAT 609 Ordered Statistics and Non-Parametric Methods
STAT 659 Applied Categorical Data Analysis
ISEN689 Theory of Socio-Technical Systems
ISEN 625 – Simulation Methods and Applications
ISEN 627 – Engineering Analysis of Decision Making
ISEN 663 – Engineering Management Control Systems
ISEN 667 – Engineering Economy
MGMT 655 – Survey of Management

Additional graduate level courses are offered throughout the department and may be used to satisfy the elective coursework requirement ***with approval of the student's advisory committee***. Particularly for the MS degree, courses must be chosen so as to complement the student's research program. All five courses listed under *Required Coursework* can be used to satisfy this requirement as well.

Other Relevant Non-Technical Coursework – up to a total of 3 hours – replaces three hours of additional coursework listed under Elective Coursework

Certain courses being offered under the Architecture and the Business Schools are directly relevant to construction engineering and management practice and a *maximum* of 3 semester credit hours may be counted towards the required coursework. Courses pre-approved for the MS degree are:

- COSC 628 Applications of Construction Law
- COSC 463 Summer Session only with Approval of Advisory Committee
- ACCT 640 Accounting Concepts and Procedures
- FINC 635 Financial Management for Non-Business
- MKTG 621 Survey of Marketing

A Master of Science Process

- **Step 1 - Form an Advisory Committee:** Students are required to form an advisory committee within the first two semesters of study. The committee consists of 3 or more graduate faculty members. The chair of the committee must be from the Department of Civil Engineering. At least one member of the committee must be from outside the Department of Civil Engineering.
- **Step 2 - Submit Degree Plan:** A degree plan is required to be filed with the Office of Graduate Studies by the end of the student's second semester. The degree plan formally declares your degree objectives, the membership of your advisory committee, and the specific courses you will be required to complete as part of your degree program.
- **Step 3 - Submit Research Proposal:** The research proposal outlines the research that you will conduct in pursuit of a degree. This proposal outlines the strategies and methods that will be used, data required, etc. The proposal must be approved by the advisory committee.
- **Step 4 – Thesis:** A draft of the thesis must be approved by the advisory committee. Consult the Thesis Clerk or review the Thesis Manual for the formatting guidelines.
- **Step 5 - Apply for Degree:** Contact the Graduate Program office for specific dates.
- **Step 6 - Final Defense:** A final oral examination is required. The student presents and defends his or her research efforts, as given by the thesis. The examination should emphasize the methodology and results of the thesis. The exam should also afford students an opportunity to make a logical, effective oral presentation, complete with visuals, and demonstrate their ability to respond to questions by the advisory committee. With the passing of the final examination and acceptance of the thesis by the advisory committee, the thesis, with approval from

Doctor of Philosophy

The Doctor of Philosophy (Ph.D.) degree is a research-oriented degree requiring a minimum of 64 semester credit hours of approved courses and research beyond the Master of Science (M.S.) degree [96 credit hours beyond the Bachelor of Science (B.S.) degree]. The university places limitations on these credit hours in addition to the requirements of the Department of Civil Engineering and the Construction engineering and management program listed below.

A complete discussion of all university requirements is found in the current Texas A&M University Graduate Catalog (available on the Internet at http://www.tamu.edu/admissions/catalogs/) under the heading "The Degree of Doctor of Philosophy." For example, university requirements include a preliminary examination, a final examination, and submission of a dissertation to the university.

NOTE: All documents requiring departmental signatures must be submitted to the Civil Engineering Graduate Office at least one day prior to the Office of Graduate Studies deadline.

A. Departmental Requirements

In addition to fulfilling the University requirements for the Doctor of Philosophy (Ph.D.) degree, a student enrolled in the Civil Engineering graduate program in the area of construction engineering and management must satisfy the following department requirements.

- A minimum of 32 credit hours of graduate level coursework taken through Texas A&M University [a minimum of 24 credit hours if the student already has taken at least another 24 credit hours of graduate course work for the Master of Science (M.S.) or Master of Engineering (M.E.) degree].
- Remaining coursework requirement can be met by 32 hours of CVEN 691

B. Construction Engineering and Management Area Requirements

The student must also satisfy the following area requirements and/or recommendations described below:

- *Qualifying Exam*: A Qualifying Examination will be scheduled with members of the Construction Engineering and Management faculty. The exam will include both written and oral components. The exam should be taken after the first semester (Fall or Spring) of study and no later than the end of the second semester (Fall or Spring) of study. In the

CEM area, Professor Damnjanovic manages the written component and Dr. Walewski manages the oral portion of the qualifying exams. Contact them for more detail.

- *Degree Plan:* An advisory committee must be formed and a Degree Plan must be submitted and approved by the advisory committee after passing the Qualifying Exam and before course registration during their third semester (Fall or Spring) of study. The proposed degree plan must be typed on the official form as it appears on the Internet at http://ogs.tamu.edu/ with endorsements by the student's advisory committee.

- *Written Preliminary Exam:* After completion of the coursework listed on the Degree Plan (with the exception of CVEN 691 Research), but no later than the end of the fifth semester (Fall or Spring) of study, a Written Preliminary Examination will be scheduled with members of the advisory committee. This exam consists of written questions from the advisory committee. The exam in total should be given over a period of one week.

- *Research Proposal:* As soon as the research project can be outlined in reasonable detail, but no later than the end of the fifth semester (Fall or Spring) of study, the dissertation research proposal should be completed. The Research Proposal shall describe the proposed research, including relevant background information, and clearly demonstrate how this research will make a unique contribution of new knowledge to the student's area of study. Upon approval of the Research Proposal by the advisory committee chair, the Research Proposal must be submitted to other members of the advisory committee at least 2 weeks (10 working days) prior to the Oral Preliminary Exam.

- *Oral Preliminary Exam:* After passing the Written Preliminary Exam, but no later than the end of the fifth semester (Fall or Spring) of study, an Oral Preliminary Examination will be scheduled with members of the advisory committee. At this examination, the student will give a presentation of the Research Proposal. The questions in this exam will cover the Written Preliminary Exam, the Oral Preliminary Exam presentation, and any relevant coursework.

- *Completion of Dissertation:* Upon approval of the Dissertation by the advisory committee chair, the Dissertation will be submitted to the other members of the advisory committee at least 2 weeks (10 working days) prior to the Final Defense.

- *Final Defense:* A Final Defense consisting of an oral examination will be scheduled with all of the advisory committee members. At this examination, the student will give a presentation of the research work completed for the degree and documented in the Dissertation. The student is encouraged to invite other interested individuals to the research presentation.

C. Recommended Coursework:

The student's advisory committee, in consultation with the student, will select coursework to complement the overall objectives of the proposed degree plan. Particularly for the Ph.D. degree, courses must be chosen so as to complement your research program as well as any future career goals. The courses listed below will typically have other graduate level courses as pre-requisites.

1. Courses within Specialty Area Geared for Research Students

Course No.	Course Name
CVEN 640	Project Development: Methods and Models
CVEN 644	Project Risk Management
CVEN 654	Strategic Construction and Engineering Management
CVEN 710	Engineering Project Finance

*Potential alternates CARC 601/602 and MGMT 687

2. Graduate Courses required for ME and MS students

The courses listed below are part of the core course requirements for CEM masters students. While none of these courses are required for our doctoral students, they frequently serve as pre-requisite courses for higher level courses. Most students admitted into CEM program have already taken these courses as part of their own master's curriculum.

Course No.	Course Name
CVEN 638	Computer Integrated Construction Engineering Systems
CVEN 641	Construction Engineering Systems
CVEN 668	Advanced EPC Project Development
CVEN 717	Engineering Project Controls

Not every course on this list will be taught every year. The student must confirm the availability of these courses when preparing a degree plan. Use the "Howdy" web based system to identify which courses will be offered in which semesters.

A student may decide to take one of these courses as part of their doctoral program to: (1) explore differences in construction and project management practices if their corresponding undergraduate coursework was in another country; or (2) their master's degree was not in civil engineering and their curriculum would benefit from these core courses for a possible future in academia, or even in practice, within civil engineering.

3. Additional Graduate Elective Courses Recommended

The courses listed below are also offered as part of the Construction Engineering and Management specialty area and may be applicable to a student depending to their research focus:

Course	Description
CVEN 689	Engineering Risk Analysis
STAT 601	STAT Statistical Analysis
STAT 602	Statistical Methods of Regression Analysis
STAT 606	Design of Experiments
STAT 607	Sampling
STAT 608	Least Squares and Regression Analysis
STAT 609	Ordered Statistics and Non-Parametric Methods
STAT 615	Stochastic Processes
STAT 632	Statistical Design Theory
STAT 659	Applied Categorical Data Analysis
ISEN 625	Simulation Methods and Applications
ISEN 627	Engineering Analysis of Decision Making
MGMT634	Seminar in Organizational Behavior
MGMT 636	Seminar in Organizational Theory
MGMT 680	Business and Corporate Strategy
BUCH 676	Science and Technology Policy

D. Recommended Course Plans:

The following sample degree plans provide some possible courses to consider based on the stated emphasis areas. Final coursework selection should be made in consultation with the advisory committee.

PhD Student 1 (with MS Degree from another University)

Number	Course Description	Credit Hours
CVEN 640	Project Development: Methods and Models	3.0
CVEN 643	Advanced Construction Materials and Methods	3.0
CVEN 644	Project Risk Management	3.0
CVEN 654	Strategic Construction and Engineering Management	3.0
ISEN 625	Simulation Methods and Applications	3,0
COSC 690	COSC Research Theory	3.0
MGMT 680	Business and Corporate Strategy	3.0
MGMT 655	Survey of Management	3.0
STAT 601	Statistical Analysis	4.0
BUCH 671	Science and Technology Policy	3.0
CVEN 691	Research	32.0

PhD Student 2 (with MS Degree from Texas A&M)

Number	Course Description	Credit Hours
CVEN 640	Project Development: Methods and Models	3.0
CVEN 689	Management of New Project Development	3.0
CVEN 689	Optimization Methods in Engineering and Design	3.0
CVEN 691	Research	40.0
ISEN 625	Simulation Methods and Applications	3.0
ISEN 667	Engineering Economy	3.0
MGMT 655	Survey of Management	3.0
MGMT 680	Business and Corporate Strategy	3.0

Graduate Coursework

Pre-requisite Coursework

All of the following courses (*and their pre-requisites*) are considered prerequisite to any graduate program of study in construction engineering and management:

- CVEN 322 – Civil Engineering Systems (PhD students only)
- CVEN 349 – Civil Engineering Project Management
- CVEN 405 – Construction Management of Field Operations
- CVEN 473 – Engineering Project Estimating and Planning

None of these courses may be counted towards any graduate degree in construction engineering and management.

You may be required to complete additional pre-requisites as part of your admission into the program. Those classes also cannot be applied towards the credit hour requirement. Pre-requisite coursework needs to be completed during your first semester at Texas A&M University, as they are pre-requisites for all our courses.

If you completed a pre-requisite before arriving at Texas A&M University and need it waived, you must bring a copy of your transcript showing the final grade in the course as well as a copy of the course syllabus to Dr. Ford. Additional information about the courses taken may be required. This transcript and syllabus will be reviewed to see if indeed they satisfy the requirements, at which time this information will be communicated to the Civil Graduate Office. The review process can take up to two weeks.

Course Description and Typical Schedule

A range of courses are offered within the Zachry Department of Civil Engineering. For a full listing and description of the courses, please refer to the Graduate Course Catalog. Keep in mind that graduate courses are typically only offered once a year at most, with many of the elective courses only being offered on alternate years. The following table indicates the typical course offering and pre-requisites. Keep in mind that the actual course offering schedule may differ from the table below.

Dept	No	Title	Pre-Requisites
CVEN	639	Methods Improvement for Construction Engineers	CVEN 349/405
CVEN	640	Project Development: Methods and Models	STAT 211/601

CVEN	641	Construction Engineering Systems	CVEN 473
CVEN	644	Project Risk Management	STAT 211/601
CVEN	654	Strategic Construction and Engineering Management	CVEN 349/405/473
CVEN	668	Advanced EPC Project Development	CVEN 473
CVEN	71	Engineering Project Finance	CVEN 349/405/473
CVEN	717	Engineering Project Controls	CVEN 349/405/473
CVEN	689	Highway Project Development and Project Management	CVEN 473

Funding Opportunities

Funding Opportunities from Within the CEM Program

Research Assistantships

Research Assistantship (RA) positions are offered through individual faculty members. There is *no centralized list* of available positions. You will need to set-up appointments to meet with faculty members individually. You are **strongly** recommended to review our department's web site to identify the different research areas each professor is working in before meeting with them.

Teaching Assistantships

New students are automatically considered for the small number of available positions based on their graduate application package. All other students should send an email expressing interest with their resume attached to Professor Ford by November 1st for the spring semester and March 1st for the fall semester. The subject line of the email should be "CEM TA position application". These will be collected and used in TA selection.

If you are an international student, you must have satisfactorily passed all parts of the ELPE exam before being considered for a TA position. It is your responsibility to contact that office and take the ELPE examination in time for the use of its results in TA selection.

Fellowships

Fellowships are typically awarded to incoming students, and there is no formal application process. Any request for fellowships must come from your research advisor, who is recommending you for this award to Professor Ford, who coordinates those awards for the CEM program.

Tuition Waivers and In-state Tuition

Tuition waivers do not exist by themselves – Research and Teaching Assistantship positions will include coverage of your tuition. Additionally, you can qualify for in-state tuition if you are awarded a Fellowship.

Funding Opportunities Outside the CEM Program

Financial Aid at Texas A&M

The CEM faculty and graduate advisors do not coordinate nor keep records of student worker positions in the department outside the CEM program. To pursue job opportunities beyond the CEM TA/RA positions, you may want to:

- Contact department faculty members outside the CEM program about RA/TA positions
- Contact researchers at the Texas Transportation Institute about RA positions
- Look at: http://jobforaggies.com
- Look at: http://ogs.tamu.edu/prospective-students/funding-information/

for additional funding opportunities.

Financial Aid Outside Texas A&M

There are many organizations that provide funding for graduate studies. Each has its own set of objectives and requirements. See http://ogs.tamu.edu/prospective/financial/large-national-graduate-fellowship-programs.html for links to some of these.

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Additional Information

Full-Time Enrollment

Required credit hours to be certified as a full-time are:

- Fall and Spring semesters 9 hours
- 10-week summer semester: 6 hours

Graduate students may be certified as full time with fewer than the required hours under special circumstances, including:

- During their final semester before graduation;
- Presence of a documented disability that mandates a reduced course load

These exceptions may or may not apply to a student's eligibility for certain types of financial aid. Students who have questions about how exceptions to the full time enrollment requirements will affect their scholarships, loans, grants, etc., should confer with their financial aid counselor.

In most cases, international students are eligible for the same exceptions to full time requirements; however, all international students requesting an exception to full time requirements must have their request approved by International Student Services. Students who are not U.S. citizens, but who are permanent U.S. residents (VISA TYPE = IM) are not required to clear with ISS on enrollment exceptions.

A student who is enrolled in less than a full-time course of study at Texas A&M may be in jeopardy of:

- being out of compliance with the Bureau of Citizenship and Immigration Services (formerly INS) if enrolled at Texas A&M on a student visa;
- losing their Research or Teaching Assistantship position;
- losing insurance coverage under his or her parent/guardian's insurance policy;
- being placed on a loan repayment schedule by a lender or guarantor if the student is the recipient of Federal financial aid; and/or
- losing a scholarship if the guidelines for receiving the scholarship require full-time enrollment, etc.

Mailboxes

All graduate students will have a mailbox assigned to them on the 7th floor of the CE/TTI building. They usually are created for new students by the 2nd or 3rd week of classes. Remember to check your mailbox on a regular basis, as sometimes critical information from the University and/or Department will be sent to your campus mailbox rather than your mailing address.

Student Offices

Offices for students who are Teaching Assistants are made through the main CE Graduate Advising Office for construction engineering and management students. You are responsible for contacting the department graduate office for a desk assignment.

For students who become involved in research, desk assignments are coordinated by Ms. Vickie Garcia on the 7th floor of the CE/TTI building. Once you start working on a research project with your advisor, you need to see him/her about a desk. There is often a waiting list, so do not expect an immediate desk assignment. The department is currently working to open up additional office space for graduate students.

Academic Probation

Graduate students must maintain 3.0 GPR or better throughout the duration of their graduate study. This requirement includes courses in degree plan and all graduate courses taken. If a course is repeated, the last grade received will be the one utilized in GPR calculation. When a student's GPR (either cumulative, degree plan or semester) falls below 3.0, the student is placed on probation by the department. Notifications are made by letter to the student, the advisor, and other pertinent offices within the university. If a student's GPR falls below 3.0, the student must develop an evaluation of the causes of the performance problem and a plan to raise GPR to above 3.0 within one semester. Submit that evaluation and plan to the graduate advisor, Professor Ford, and meet with him.

Once a plan has been devised and accepted, it will be forwarded to the main CE Graduate Office. If the student fails to raise their GPR, they will be removed from the construction engineering and management graduate program. Under extenuating circumstances, a second semester may be allowed for the student to raise their GPR.

Frequently Asked Questions

Degree Plans

1. ***What is the difference between the MS and MENG degree?***

   - MEng (Master of Engineering) - non-thesis option requiring 30 hours of graduate credit
   - MS (Master of Science) - thesis option requiring 32 hours of graduate credit

   Accordingly, the MS degree is more research oriented and the MEng degree is more course work oriented and geared towards professional practice.

2. ***I have taken a graduate level course in which I got a C. This course is already present on my degree plan. Can I keep the course on the degree plan?***

   Yes. The requirement for graduate students is to maintain a GPA of 3.0 on the degree plan. The intent of the degree plan is to identify the appropriate course of study for your chosen degree as determined by your advisor. Once the courses have been chosen and placed on an approved degree plan, it is the student's responsibility to maintain a 3.0.

   It is NOT the intent of the degree plan to allow students to take courses and then, after taking the courses and receiving a grade, to choose whether or not the courses are to be included on the degree plan. A student is NOT to choose only those courses for inclusion in the degree plan for which he/she may receive grades of A or B!

3. ***Can I change the courses on my degree plan once it is filed?***

   Yes, the student can change the courses by filing a Petition. The Petition must be signed by **ALL** committee members or advisor (MENG degree) AND the department head. The Petition must subsequently be filed with the Office of Graduate Studies (OGS) and approved.

4. ***Can I change my degree status once I have been admitted?***

   Yes, once admitted to graduate school, a student may file a Petition to change a degree status. The petition and the student's original application package and performance at Texas A&M will be reviewed by the CEM faculty in a manner similar to the review of new applications. Requirements for acceptance into a specific degree program are the same for enrolled students as for new students. If granting the request in approved by the CEM Program the Petition must be signed by the department head and then filed with the Office of Graduate Studies (OGS) and approved. International students must check with the International Student Services Office to maintain legal status.

5. ***Can I change my degree status once a degree plan is filed?***

   Yes, the student must file a Petition that is available electronically through the Office of Graduate Studies (OGS) website. The Petition will include any changes needed to the degree plan. The Petition must be signed by ALL committee members AND the department head. The Petition must subsequently be filed with the Office of Graduate Studies (OGS) and approved. Requirements for acceptance into a specific degree program are the same for enrolled students as for new students.

6. ***Are leveling courses to be included in the degree plan even though they cannot be counted towards the required number of credits?***

   Leveling courses should be listed at the bottom of the degree plan as prerequisites.

7. ***Who should be on my degree plan committee?***

   MEng degree committee: chair as assigned by the graduate advisor.

   MS and PhD degree committee: students must identify a professor within the area of construction engineering and management to serve as their research advisor, who serves as the chair. Other members will be selected based on discussions with the committee chair, with at least one member from outside the CVEN department.

8. ***When should I file the degree plan?***

   MEng degree: students should file by the middle of the second semester after starting their graduate coursework (can be completed earlier).

   PhD and MS students: students must file before preregistration of the second semester, summer semester excluded.

   Keep in mind: the Office of Graduate Studies will block you from registration after completing 9 hours of graduate courses. If you do not register, you run the risk of losing your full-time student status.

Assistantships

1. ***How can I register to satisfy the full-time status for my RA/TA?***

   To hold an assistantship for the Spring and Fall semesters, the student needs to register for a minimum of 9 hours in order to be considered full-time.

To be considered a full-time student for the Summer, a student must register for a minimum of 6 credit hours in one of the two following ways:

- 6 credit hours during the 10-week summer term OR
- 3 credit hours during each 5-week summer term

No other combinations are allowed.

2. ***How do I apply for a Teaching Assistant (GAT) position?***

   See the Funding Opportunities of this handbook.

3. ***How do I apply for a Research Assistant (RA) position?***

   See the Funding Opportunities of this handbook.

4. ***I am an international student and English is my second language. Can I apply for a TA? What is the requirement?***

   International students whose native language is not English and who wish to apply for a TA position must fulfill an English proficiency requirement. The English Proficiency Certification is *required before* a graduate student is eligible to apply to serve as a TA or in any other position considered to be a teaching position.

   It is best to meet this proficiency requirement early in a student's program. Contact the International Admissions Office for more information on proficiency testing.

Probation

1. ***What is the criteria on probation?***

   Graduate students are expected to maintain a Grade Point Ratio (GPR) equal to or better than 3.0 *throughout* the duration of their graduate study. This requirement applies to each of cumulative, degree plan, and semester GPR. It is also a prerequisite for receiving a graduate degree in civil engineering.

2. ***What happens after one semester on probation if my GPR is not back up to 3.0?***

   If after one semester on probation a student's cumulative or degree plan GPR is not back up to 3.0, the Office of Graduate Studies will be asked to remove the student from the graduate studies program. If extenuating circumstances exist, probation time may be extended for one more semester, allowing the student a final chance to meet the minimum GPR requirement.

3. ***What if the GPR requirement is satisfied after one semester, but falls again below 3.0 in another semester?***

   The student is placed on probation again.

4. ***I took a course in which I got an I for incomplete. After one semester, it becomes an F. Now I am on probation. What can I do to change the F back to a better grade?***

   The student must complete the course work for which an I was received by submitting the required course work to the professor. The professor will then submit a grade change form. This change may or may not change the student's GPR, depending on the final grade received. The student will remain on probation until the registrar has changed the grade in the system.

5. ***Does I (incomplete) in 691 (research) 684 (professional internship), or 692 (Professional study) become an F after one semester?***

   No, these courses are excluded from that rule.

6. ***Does an I (incomplete) of 685 (problems) become an F after one semester?***

   Yes, if you receive an I in 685, it will turn to an F after one semester. The course 685 is a letter grade course and therefore is not excluded from the rule.