# Civil Engineering - Graduate Programs

## Objective

The objective of the graduate program in civil engineering is to prepare students for continued professional and scholarly development consistent with their technical interests. Students, with the assistance of a faculty advisor in their area of interest, plan their programs of study in one of the technical areas in civil engineering. Typical program and research areas are:

a. Construction Engineering and Management;
b. Environmental (water and air quality control, and solid and hazardous materials control);
c. Geotechnical (soil mechanics and foundations);
d. Infrastructure Systems Engineering and Management;
e. Structures and Applied Mechanics;
f. Transportation (traffic planning, highways, airports and transit);
g. Water Resources (hydrology and hydraulics)

### Masters (M.S. and M.Engr.) Student Learning Outcomes

a. *Fundamental Knowledge*: Graduates will have extensive basic and applied knowledge in their selected Civil Engineering Program (CEP) interest area.
b. *Independent Abilities*: Graduates will have the ability to conduct independent and original study ranging from gathering of information to application, analysis, creation, documentation of the study, and its resolution.
c. *Critical Thinking*: Graduates will have extensive breadth and ability to critique and synthesize literature, review results and to apply this knowledge in developing new ideas, in designing and evaluating scientific investigations, and in assessing, interpreting and understanding data relating to their selected CEP interest area.
d. *Advanced Knowledge*: Graduates will demonstrate extensive mastery of the subject matter at a deeper theoretical and applied level beyond the fundamental knowledge gained in his/her undergraduate course sequence.
e. *Effective Communication*: Graduates will have the ability to present scientific results in both written and oral format in various forums including thesis defense, master's defense, project reports, manuscripts, professional society meetings, journals, and performing class lectures, presentations, and reports.
f. *Professional Development*: A student graduating with a master's degree in civil engineering is expected to demonstrate interest in pursuing lifelong learning by attaining professional licenses, and obtaining professional development hours by attendance at conferences, higher educational classes, short courses and seminars, conducting classes, and publishing.

### Ph.D. Student Learning Outcomes

a. *Fundamental Knowledge*: Graduates will command profound basic and applied knowledge in their specialty area within their Civil Engineering Program (CEP) interest area.
b. *Independent Abilities*: Graduates will have the ability to conduct a major independent and original research study that includes gathering of information, gaining an understanding of the process of academic or commercial exploitation of research results, demonstrating an understanding of contemporary research issues, effective project management, synthesis and evaluation, and appropriate dissemination of research findings.
c. *Critical Thinking*: Graduates will have a profound ability to critique and synthesize literature, review results and to apply knowledge gained from literature to develop new ideas, to design and evaluate scientific investigations, and to assess, interpret and understand data related to their specialty area within their CEP interest area.
d. *Advanced Knowledge*: Graduates will demonstrate profound mastery of the subject matter at a deeper theoretical and applied level well beyond fundamental knowledge gained in the undergraduate course sequence and the higher-level knowledge gained in the master's level course sequence.
e. *Effective Communication*: Graduates will have the ability to construct coherent arguments and articulate ideas clearly to an audience, through a variety of techniques, constructively defend research outcomes, justify their research to the profession and promote the public understanding of their research fields.
f. *Professional Development:*A student graduating with a doctoral degree in civil engineering is expected to demonstrate interest in pursuing life long learning by attaining professional licenses, and obtaining professional development hours by attendance at conferences, higher educational classes, short courses and seminars, conducting classes, and publishing.

## Grade Requirements and Continuation

The Civil Engineering Graduate Program has established rules, regulations, policies, and procedures for continuation in the graduate program and fulfilling graduation requirements. These can be found in the Civil Engineering Graduate Handbook available in the Civil Engineering Office. In addition to the requirements of the Graduate Studies listed elsewhere, to continue in the program each civil engineering graduate student must:

- For the M.S. program, maintain an overall GPA of 3.00 or higher.
- For the M.E. program, maintain an overall GPA of 3.00 or higher and a GPA of 3.00 or higher in core courses.
- For Ph.D. or BS-Ph.D. program, student must maintain a minimum GPA of 3.50 or higher in their Ph.D. Civil Engineering coursework and a 3.25 GPA outside of CE to take the comprehensive examination and to graduate from the Civil Engineering Ph.D. program or BS-Ph.D. program.

No organized course in which a grade of P is received can be used to satisfy course requirements for a graduate degree in civil engineering.

# Degree Requirements

The student is responsible for knowing the rules, regulations, and filing deadlines of the Graduate School and the Civil Engineering Committee on Graduate Studies (see Civil Engineering Graduate Handbook available in Civil Engineering Office). Requirements of the Graduate Studies and the Civil Engineering Committee on Graduate Studies must be met. The degrees offered and minimum course requirements are identified in the Master's (http://catalog.uta.edu/archives/2023-2024/engineering/civil/graduate/#masterstext) and Doctoral (http://catalog.uta.edu/archives/2023-2024/engineering/civil/graduate/#doctoraltext) tabs in the Civil Engineering section of this catalog.

# Undergraduate Coursework Credit

A limited number (not to exceed a total of nine semester hours) of 4000 level Civil Engineering elective courses may be applicable toward a graduate degree if approved in advance by the Civil Engineering Graduate Advisor.

# Admission Requirements

Performance on the GRE will not be the sole criterion for admitting applicants or the primary criterion to deny admission to either the Master's or Ph.D. program. In cases where GRE performance is relatively poor all other qualifications presented by the applicant will be carefully evaluated for evidence of potential for success.

## Unconditional Admission

A student must meet the following requirements for unconditional admission:

a. A Bachelor's Degree in Civil Engineering (Applicant with an appropriate Bachelor's Degree in another discipline is considered, subject to satisfactory completion of deficiency courses for area of interest.)
b. An undergraduate GPA of 3.0 on a 4.0 scale, as calculated by the Graduate School, is typical of a successful applicant.
c. A Graduate Record Exam (GRE) Quantitative score of 700 (old score system) or 155 (new score system) or higher is typical of a successful applicant.
d. A Graduate Record Exam Verbal score of 390 (old score system) or 146 (new score system) or higher is typical of a successful applicant.
e. For applicants whose native language is not English, a minimum score of 550 on the paper-based Test of English as a Foreign Language (TOEFL), 79 on TOEFL iBT, 50 on the SPEAK, 146 on Verbal GRE, 85 on MELAB (Michigan English Language Assessment Battery), or 6.5 on the IELTS (International English Language Testing System). (MELAB and IELTS are used only when other tests are not available in the applicant's country.)

## Probationary Admission

If applicants do not meet a majority of standards for unconditional admission outlined above, they may be considered for probationary admission after careful examination of their application materials. Probationary admission may require that the applicant receive a B or better in at least their first 9 hours of graduate coursework applicable to their degree being sought at UT Arlington, take additional English courses, and/or deficiency courses as required.

## Provisional Admission

An applicant unable to supply all required documentation prior to the admission deadline, but whom otherwise appears to meet admission requirements may be granted provisional admission.

## Deferred Admission

A deferred application decision may be granted when a file is incomplete or when a denied decision is not appropriate.

## Denial of Admission

A candidate may be denied admission if they have less than satisfactory performance on a majority of the admission criteria described above.

## Waiver of Graduate Record Exam

A waiver of the Graduate Record Exam (GRE) may be considered for a UT Arlington graduate who graduated within the past 3 years and has completed an engineering or science degree closely related to Civil Engineering. The student's GPA must equal or exceed 3.0 in the last 60 hours of study which must have been completed at UTA.

### Facilitated Admission of Outstanding UT Arlington Undergraduates

Facilitated Admission may be considered for a student who has graduated from UT Arlington no more than one academic year prior to proposed entrance to the graduate program. Students must complete the last 60 hours of study at UT Arlington. The student's UT Arlington GPA must equal or exceed 3.5 in the last 60 hours of undergraduate study and all undergraduate coursework completed at UT Arlington. The applicant's records will be assessed for evidence of strengths relevant to success in the Civil Engineering graduate program. Meeting the minimum GPA requirement shall not be the sole determinant or the primary criterion for granting facilitated admission.

### Fast Track Program for Master's Degree in Civil Engineering

The Fast Track Program enables outstanding senior undergraduate Civil Engineering students to receive undergraduate and graduate credit for up to six hours of coursework. Technical electives which are dual-listed as graduate courses will satisfy both bachelor's and master's degree requirements. Students pursuing an MECE or MSCE degree may take up to two courses for dual credit.

Interested undergraduate Civil Engineering students should apply for admission to the Fast Track Program when they are within 30 hours of completing their bachelor's degree (and before graduation). For admission consideration, they must have completed at least 30 hours at UT Arlington and have an overall and College of Engineering GPA of at least 3.00 (in both) for the MECE option and the MSCE option. Additionally, they must have completed a set of specified, basic undergraduate foundation courses with a grade of B or higher in each course and a GPA of at least 3.30 in these foundation courses. The specific foundation courses vary according to the student's desired specialty area for the master's degree.

In their final semester as an undergraduate, Fast Track students in good standing will be automatically admitted to graduate school with consent of the Graduate Advisor. No fees, transcripts, or test scores will be required. For further information about this program, contact an undergraduate advisor or the Graduate Advisor in Civil Engineering. Descriptions of CE Fast Track degree options are also available in the CE Advising Office.

### Departmental Scholarships

Students that are unconditionally admitted will be eligible to apply for available scholarships. Recipients must maintain at least a 3.0 overall GPA, and must be enrolled in a minimum of 9 hours of coursework in both long semesters to retain their scholarship. Additional requirements may be imposed by the department selection committee.

## Master's Degree Requirements

The Master of Science degree is a research-oriented program in which completion of a thesis is mandatory. The program consists of a minimum of 24 credit hours of coursework and an acceptable thesis (six credit hours). The Master of Engineering degree is an engineering practice-oriented program requiring a minimum of 30 credit hours of coursework.

### Additional Master's Degree Graduation Requirements

a. Master's students whose core course GPA is below 3.0 are required to take written exams only on the core courses in which they made lower than B grades, or they may retake those courses and make a grade of B or better.
b. Each core course exam will be similar to a final exam and will be 1.5 to 2.5 hours in duration, at the discretion of the faculty giving the exam. Also at the discretion of the faculty, the exams may be open book, closed book, or a combination of both. Students who must take exams on multiple core course subjects, may take those at different times or days.
c. Each exam must be passed with a grade of 75% or higher. In case of failing an exam subject, students will be allowed only one additional attempt on that subject.
d. In lieu of taking the exams, either the initial time or a second time, students can opt to repeat the respective core course as a 5300 class, in which case the course must be passed with a grade of B or better. The option to repeat a course as a 5300 class can only be exercised once.
e. Given this potential additional graduation requirement and in order not to postpone one's graduation, master's students are strongly encouraged to take their core courses as early as possible, ideally within the first two long semesters.

## Dual Program Degree

Students in the Civil Engineering program may participate in a dual degree program whereby they can earn a Master's Degree in Civil Engineering and a Master of City and Regional Planning. By participating in a dual degree program, students can apply a number of semester hours jointly to meet the requirements of both degrees, thus reducing the total number of hours required to earn both degrees separately. The number of hours that may be jointly applied ranges from 6 to 18 hours, subject to the approval of each program's Committee on Graduate Studies and Graduate Advisor. Those interested in the dual degree program should consult the appropriate graduate programs for further information on course requirements, including information regarding which courses are suitable for joint application of credit hours.

To participate in the dual degree program, students must make a separate application to each program, be accepted by each program, and must submit separate Programs of Work for each degree showing only courses that meet requirements for the specified degree, including those joint courses that meet requirements for both degrees. A student must be admitted to the second program before completing more than 15 semester hours in the first, exclusive of leveling, deficiency, or foundation courses, and must complete the second degree within one academic year following completion of the first. See also the statement on "Dual Degree Programs" in the general admission section of this catalog.

# Admissions Requirements

Performance on the GRE will not be the sole criterion for admitting applicants or the primary criterion to deny admission to either the Master's or Ph.D. program. In cases where GRE performance is relatively poor all other qualifications presented by the applicant will be carefully evaluated for evidence of potential for success.

## Unconditional Admission

A student must meet the following requirements for unconditional admission:

a. A Master's Degree or at least 30 hours of graduate coursework in Civil Engineering. (Applicant with a Master's Degree in another discipline is considered, subject to satisfactory completion of deficiency courses for the CE area of interest.)
b. No specific GPA requirement (application considered as a whole). However, a graduate coursework GPA of 3.5 on a 4.0 scale, as calculated by the Graduate School, is typical of a successful applicant.
c. A Graduate Record Exam (GRE) Quantitative score of 740 (old score system) or 158 (new score system) or higher is typical of a successful applicant.
d. A competitive Graduate Record Exam (GRE) Verbal score. A successful applicant typically has a Verbal score of 420 (old score system) or 148 (new score system).
e. For applicants whose native language is not English, a minimum score of 550 on the paper-based Test of English as a Foreign Language (TOEFL), 79 on TOEFL iBT, 50 on the SPEAK, 148 on Verbal GRE, 86 on MELAB (Michigan English Language Assessment Battery), or 6.5 on the IELTS (International English Language Testing System). (MELAB and IELTS are used only when other tests are not available in the applicant's country.)
f. Favorable letters of recommendation from people familiar with the applicant's academic work and/or professional work.

## Probationary Admission

If applicants do not meet a majority of standards for unconditional admission outlined above, they may be considered for probationary admission after careful examination of their application materials. Probationary admission may require that the applicant receive a B or better in at least their first 9 hours of graduate coursework applicable to their degree being sought at UT Arlington, take additional English courses, and/or deficiency courses as required.

## Provisional Admission

An applicant unable to supply all required documentation prior to the admission deadline, but whom otherwise appears to meet admission requirements may be granted provisional admission.

## Deferred Admission

A deferred application decision may be granted when a file is incomplete or when a denied decision is not appropriate.

## Denial of Admission

A candidate may be denied admission if they have less than satisfactory performance on a majority of the admission criteria described above.

## CE BS-Ph.D. Program

## Unconditional Admission

A student must meet the following requirements for unconditional admission:

a. No Specific GPA requirement (application considered as a whole). However, an undergraduate coursework GPA of 3.5 on a 4.0 scale, as calculated by the Graduate School, is typical of a successful applicant.
b. A Graduate Record Exam (GRE) Quantitative score of 740 (old score system) or 158 (new score system) or higher is typical of a successful applicant.
c. A competitive Graduate Record Exam (GRE) Verbal score. A successful applicant typically has a Verbal score of 420 (old score system) or 148 (new score system).
d. For applicants whose native language is not English, a minimum score of 550 on the paper-based Test of English as a Foreign Language (TOEFL), 79 on the TOEFL iBT, 50 on the SPEAK, 86 on MELAB (Michigan English Language Assessment Battery), or 6.5 on the IELTS (International English Language Testing System). (MELAB and IELTS are used only when other tests are not available in the applicant's country.)
e. Favorable letters of recommendation from people familiar with the applicant's academic work and/or professional work.

## Probationary Admission

If applicants do not meet a majority of standards for unconditional admission outlined above, they may be considered for probationary admission after careful examination of their application materials. Probationary admission may require that the applicant receive a B or better in at least their first 9 hours or graduate coursework applicable to their degree being sought at UT Arlington, take additional English courses, and/or deficiency courses as required.

## Doctoral Degree Requirements

Doctor of Philosophy (Ph.D.) is a research oriented degree and, as such, requires the candidate to successfully carry out original and independent research in a civil engineering area acceptable to the civil engineering faculty. In addition to research, student's Ph.D. advisor and Ph.D. Committee will evaluate the student's fundamental knowledge of the master's core courses and determine the required coursework. For B.S.-Ph.D., students are required to complete a minimum of 30 credit hours of coursework, which must include master's core courses. A total of nine (9) hours of dissertation courses (CE 6399, 6699, or 6999) must be taken; at least three (3) of those hours must be in the semester of graduation.