

Department of Civil and Architectural Engineering

Contact Information

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Mission

The mission of the Department of Civil and Architectural Engineering at Texas A&M University-Kingsville is to create a respectful learning environment that prepares graduates to meet industry needs, demonstrate professional responsibility, and pursue fulfilling careers.

M.S. in Civil Engineering Objectives:

After completing the M.S. in Civil Engineering degree, master's graduates will demonstrate the following skills beyond those expected of a baccalaureate recipient:

1. A deeper understanding of problem-solving and research skills in civil engineering field.
2. An ability to design increasingly complex systems in the fields of geotechnical, structural, transportation, and/or water resources engineering.
3. Professional communication skills.

Department Faculty

Aguiniga, Francisco Professor, Department of Civil and Architectural Engineering; B.S., University of Michoacan (Mexico); M.S., University of Illinois at Urbana-Champaign; Ph.D., Texas A&M University.

Al-Hamdan, Osama Associate Professor, Department of Civil and Architectural Engineering; B.Sc., Jordan University of Science and Technology (Jordan); M.Sc., University of Alabama in Huntsville; Ph.D., University of Alabama in Huntsville.

Al-Qudah, Omar M Assistant Professor of Practice, Department of Civil and Architectural Engineering; B.S., Mu'tah University (Jordan); M.S., Jordan University of Science and Technology (Jordan); Ph.D., The University of Texas at El Paso.

Bailey, Breanna Professor, Department of Civil and Architectural Engineering; Chair; B.S., Texas A&M University; M.S., University of Illinois at Urbana-Champaign; Ph.D., Texas A&M University.

Choi, Jong-Won Associate Professor, Department of Civil and Architectural Engineering; B.S., Korea University (South Korea); M.S., Georgia Institute of Technology; Ph.D., Georgia Institute of Technology.

Faruqi, Mohammed A Professor, Department of Civil and Architectural Engineering; B.S.C.E., Texas A&I University; M.S.C.E., Texas A&I University; M.Eng., Pennsylvania State University; Ph.D., University of Arkansas.

Glusing, James Associate Professor, Department of Civil and Architectural Engineering; B.Arch., University of Houston; M.Arch., University of Houston.

Hessami, Amir Assistant Professor, Department of Civil and Architectural Engineering; B.S., Fedowsi University (India); M.S., Sharif University of Technology (Iran); Ph.D., Texas A&M University.

Liu, Xiaoyu Associate Professor, Department of Civil and Architectural Engineering; B.S., Nanjing University of Science and Technology (China); M.S., Tongji University (China); Ph.D., University of Nebraska-Lincoln.

Shen, Hui Associate Professor, Department of Civil and Architectural Engineering; B.S., East China Jiaotong University (China); M.S., Tongji University (China); Ph.D., Purdue University.

Civil Engineering (CEEN)

CEEN 5303 Advance Topics in Civil Eng 1-3 SCH (1-3)

One or more advanced topics. May be repeated for credit with change in topic.

CEEN 5304 Internship in Civil Eng 1-3 SCH (1-3)

Allows civil engineering graduate students the opportunity to participate in internships with industry, government, and consulting companies in career-based practical activities to broaden the skills obtained through curricular education. Attention will be given to select opportunities where the job training enhances the particular research needs of each student. Credit/Noncredit.

CEEN 5305 Graduate Research Project 3 SCH (3)

Designed for project option students and requires completion of research project. Prerequisite: departmental approval. May be repeated for a maximum of 6 semester hours.

CEEN 5306 Thesis 3 SCH (3)

Designed for thesis option students. The course requires completion of thesis research. Prerequisite: departmental approval. May be repeated for maximum of 6 semester hours.

CEEN 5310 Theory of Elasticity 3 SCH (3-0)

Introduction to index and tensor notations; discussion of the concept of stress, strain, deformations, strain compatibility and constitutive relations; formulation and solution of extension, bending, torsion and two-dimensional elasticity problems. (Credit may not be obtained in both CEEN 5310 and MEEN 5320.)

CEEN 5311 Adv Reinforced Conc Design 3 SCH (3-0)

Analysis and design of flat plate, flat slab and two-way slab systems for gravity loads and lateral loads. Yield line theory of slabs. Deep beams, shear-friction, brackets and corbels. Length effects on braced and unbraced columns. Prerequisite: CEEN 3304.

CEEN 5312 Eng Reinforced Conc Slabs 3 SCH (3-0)

Elastic plate theory, finite difference, behavior of two-way slabs, ACI code design methods, upper and lower bound methods, serviceability, shear strength, pre-stressed slabs. Prerequisite: graduate standing in engineering.

CEEN 5313 Numerical Methods in Civil Eng 3 SCH (3-0)

Numerical methods for advanced analysis and design applications in Civil Engineering. Prerequisite: MATH 5372. (Credit may not be obtained for both CEEN 5313 and MEEN 5313.)

CEEN 5314 Finite Element Methods in Engi 3 SCH (3-0)

Principles and applications of the Finite Element Method: energy based variational principle methods, the principles of virtual work, weighted residual methods. Emphasis on structural and nonstructural elements and applications. Prerequisite: CSEN 2304 or equivalent and graduate standing.

CEEN 5315 Hydraulics of Open Channels 3 SCH (3)

Application of momentum and energy principles to advanced topics in uniform, nonuniform, gradually varied and rapidly varied flow problems. Backwater flow profile computation in steady flow. The method of characteristics applied to unsteady flows. Jeffreys-Verdernikov criteria. Flood routing calculations by advanced computer methods. Prerequisite: CEEN 3392 or CHEN 3392.

CEEN 5316 Eng Mechncs of Fiber Composites 3 SCH (3-0)

Introductions of basic composite material technologies, properties of classic laminate theory, transformation of stresses and strains, failure theories, performance under adverse conditions, structural design considerations, computer applications, application of composites to concrete structures and practical case studies. Prerequisite: graduate standing in engineering.

CEEN 5320 Foundation Engineering I 3 SCH (3-0)

Engineering characteristics of soils, consolidation, soil strength and bearing capacity for the analysis and design of spread and continuous footings, compensated foundations and deep foundations. Prerequisite: graduate standing in engineering.

CEEN 5321 Structural Dynamics 3 SCH (3-0)

Dynamic disturbances, such as earthquakes and blasting. Vibration of beams, frames and floor systems; response to various types of external disturbances; energy methods. Prerequisite: MEEN 3355.

CEEN 5322 Foundation Engineering II 3 SCH (3-0)

Engineering characteristics of soils, soil strength, lateral earth pressure theories, analysis of braced walls for excavation, retaining walls, sheet-pile walls and cofferdams. Prerequisite: graduate standing in engineering.

CEEN 5326 Adv Construction Management 3 SCH (3-0)

Advanced theory, methods, and analytical tools to efficiently plan, schedule, estimate, organize, implement, and monitor civil engineering projects from inception to construction and start-up.

CEEN 5332 Structural Wood Design 3 SCH (3-0)

Design of wood structures with focus on allowable stress design considering material properties and environmental effects. Analysis and design of diaphragms, flexural members, axial members, and connections.

CEEN 5333 Advanced Strength of Materials 3 SCH (3-0)

Torsion of noncircular sections, membrane theory of shells, bending of plates and beams on elastic foundations. Two dimensional elasticity theory. Prerequisite: CEEN 3311.

CEEN 5335 Prestressed Concrete 3 SCH (3-0)

Principles and methods of design of members subject to linear prestressing; time-dependent variables and long-time deflections. Prestressed columns. Prerequisite: CEEN 3304.

CEEN 5337 Advanced Structural Analysis 3 SCH (3-0)

Theorems of external work and internal strain energy. Classical methods of analysis. Continuous girders and frames with variable moments of inertia. Influence lines for redundant reactions. Analysis of sideways by moment distribution. Introduction to matrix analysis of structures. Prerequisite: CEEN 3303.

CEEN 5340 Water Resources Engineering **3 SCH (3-0)**

Comprehensive integration of engineering, economics, environmental, legal and political considerations in water resources development and management, current issues and future direction for planning and management of water resources.

CEEN 5342 Adv Geotechnical Engineering I **3 SCH (3-0)**

Advanced principles of geotechnical engineering including elastic deformation of soil, one-and two-dimensional fluid flow through soil, soil consolidation, strength of soil, stability of earth retaining structures, and slope stability.

CEEN 5350 Transportation Eng I **3 SCH (3-0)**

Profession of transportation, transportation industry-systems and organizations, modes of transportation and their characteristics, transportation planning, forecasting travel demand by mode, evaluation of transportation alternatives including economic criteria, transportation systems management.

CEEN 5352 Design of Asphalt Pavements **3 SCH (3-0)**

Asphalt pavement design and material selection including design of sub-grade, base, and hot mix pavement. Laboratory specifications, environmental concepts, and performance specifications.

CEEN 5353 Design of Intelligent Tran Sys **3 SCH (3-0)**

The use of modern electronics and communication technologies to improve the performance of the transportation system. Basic principles of design intelligent transportation systems for urban and rural areas will be introduced.

CEEN 5354 Pavement Management Systems **3 SCH (3-0)**

Development of pavement management systems considering life-cycle cost estimation, software applications, infrastructure asset management, pavement distress types, and pavement preservation.

CEEN 5355 Groundwater Hydrology **3 SCH (3-0)**

An applied course dealing with groundwater hydrology and its interrelation with surface water, water well design, well pumps, well hydraulics, pumping tests and safe yield of aquifers, artificial recharge, flow nets, salt water intrusion and some modeling of groundwater flow. Prerequisites: CEEN 3392 or CHEN 3392.

CEEN 5356 Physchem Treat Wtr and Wstwtr **3 SCH (3-0)**

Theory and fundamentals of physical and chemical unit processes used for water and wastewater treatment. Process analysis, water quality criteria and standards and pertinent journal articles are reviewed. Prerequisite: B.S. in Civil or Chemical Engineering or EVEN 5303.

CEEN 5360 Adv Structural Engineering **3 SCH (3-0)**

Initial value problems, elasticity preview, basic energy principles and applications to pin-connected structures, calculus of variation, applications to plates, stability, applications to dynamics. Prerequisite: graduate standing in engineering.

CEEN 5361 Adv Structural Steel Design **3 SCH (3-0)**

Design of steel structural members, including composite beams, plate girders and connections following the AISC LRFD specifications, economy evaluation of building design and design of frame structures including second order effects. Prerequisite: graduate standing in engineering.

Civil Engineering, M.S.

For all M.S. Civil Engineering students, no more than three graduate-level courses (9 credit) from outside Civil Engineering may be applied to degree. The first three graduate-level courses (9 credit total) must be Civil Engineering courses.

Thesis Track

Students must complete 8 graduate-level courses (24 credits) and successfully defend a thesis proposal and thesis (CSEN 5306, 6 credits) for a total of 30 credits.

Research Project Track

Students must complete 11 graduate courses (33 credits) and successfully defend a research project report (CEEN 5305, 3 credit) for a total of 36 credits.

Course-Only Track

Student must completed 12 graduate-level courses (36 credits) and successfully pass a comprehensive exam.

All students must complete at least one graduate-level course in each of the four civil engineering technical areas of the M.S. Civil Engineering degree, to be selected from the following courses:

Code	Title	Semester Credit Hours
Geotechnical Engineering		3
CEEN 5320 or CEEN 5342	Foundation Engineering I Adv Geotechnical Engineering I	

Structural Engineering		3
CEEN 5311 or CEEN 5321	Adv Reinforced Conc Design Structural Dynamics	
Transportation Engineering		3
CEEN 5353 or CEEN 5350	Design of Intelligent Tran Sys Transportation Eng I	
Water Resources Engineering		3
CEEN 5315 or CEEN 5340	Hydraulics of Open Channels Water Resources Engineering	