CAD/CAE and Smart Structures

Spring
CE 832 Adv Behavior/Design of Metal Structures
CE 763 Bridge Engineering
CSE 763 Intro to Distributed Computing
SCE/CE739 Knowledge-Based Systems
CE/ME 839 Finite Element Method in Engineering Science
ISE 832 Mathematical Programming:Advanced Nonlinear
ME870 Digital Signal Analysis of Mechanical Systems
ME 571 Principles of Automatic Control
ME 672 Control Systems Design

Winter
CSE 738 Intermediate Structural Steel
CE 735 Matrix Structural Analysis
CE 768 Finite Elements Methods
ISE 831 Mathematical Programming-Nonlinear
AAE 620 Automatic Control of Aerospace Vehicles I
CSE 721 Intro to Parallel Computing
CSE 779 Intro to Neural Networks
ME 571 Principles of Automatic Control
ME 773 Applied Digital Control
Math 602 Mathematical Principles in Science II
ME 870 Digital Signal Processing

Autumn
CSE 621 Intro to High-Performance Computng
ISE 703 Mathematical Programming-Linear
Math 601 Mathematical Principles in Science I
ME 571 Principles of Automatic Control
ME 731 Vibrations of Discrete Systems
CSE 642 Numerical Linear Algebra
EE Intro to Feedback Control Systems

For Additional Information, please contact
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For application information visit:

www.gradadmissions.osu.edu

Graduate Study in STRUCTURES ENGINEERING

THE OHIO STATE UNIVERSITY

RESEARCH

Research activities by the Structures faculty and students include structural optimization, artificial intelligence and knowledge-based expert systems applied to structural analysis and design, computer-aided design, earthquake engineering and structural dynamics, bridge engineering, fracture initiation and propagation, behavior of materials at high rates of strain, composite materials and laminated composites, impact, wave propagation in solids, bridge engineering, nonlinear structural analysis, computational mechanics, parallel processing, neuro-computing, high-performance smart structures, active control of structures, wavelets, health monitoring structures, intelligent transportation systems, design-build integration, object-oriented programming, design and behavior of reinforced concrete structures and prestressed/precast concrete structures, seismic evaluation, and the analysis and rehabilitation of bridges and buildings.

FACILITIES

The flagship University computer facility is the Ohio Supercomputer Center located on campus. This facility principally supports research computing. The University also provides a Homenet environment that gives students access to a variety of computer resources on campus, in Ohio, and on the Internet. In addition, the department maintains specialized facilities to address the needs of our programs. The facilities are under the auspices of the College of Engineering Region 1, which is supported, in part, by a University computer fee. The physical facility consists of over 100 PCs and 16 SGI workstations. Students have 24-hour, 7 days a week access. Some are available on a walk-in basis; others provide studio settings for advanced users. At least 35 software packages are available including the Microsoft Office suite, AutoCAD, various GIS and image processing packages.

FACULTY

Hojjat Adeli, ***Lichtenstein Professor, Ph.D., Stanford University*** (computer-aided design, optimization, software engineering, artificial intelligence, steel structures, neural network computing, distributed computing, parallel processing and supercomputing, earthquake engineering, structural control, smart structures, highrise structures, wavelets, intelligent transportation systems, design-build integration bridge engineering, health monitoring of infrastructure systems, computational neuroscience.).
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Shive Chaturvedi, ***Associate Professor, Ph.D., Indian Institute of Technology, Kanpur, India***. (advanced composites, concrete-steel-composite hybrids, and recycled materials; material deterioration and life prediction; ecological ethics; language, consciousness and cultures; science technology and society).
E-mail: chaturvedi.1@osu.edu

Oliver McGee, III, ***Professor and Chair, Ph.D.***, **University of Arizona**. (Analysis and design of tall buildings and bridge systems, finite element methodologies, vibrational methods, computational and statistical mechanics, interdisciplinary design synthesis and nonlinear programming techniques, aeromechanic and control of dynamic flow instabilities in air-breathing propulsion systems used for aircraft).
E-mail: mcgee.1@osu.edu

Halil Sezen, ***Assistant Professor, Ph.D., University of California, Berkeley***. (structural analysis, advanced reinforced concrete design and response/behavior of structures to extreme loading conditions, such as earthquakes, performance-based structural design, evaluation and rehabilitation of bridges and buildings, prestressed/ precast concrete structures).
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MINIMUM REQUIREMENTS

In addition to the general requirements of the Graduate School, there are minimum departmental requirements listed in the general descriptive Graduate Civil Engineering brochure which need to be fulfilled by all students majoring in structural engineering. Listed below are area conditions which also need to be fulfilled; where these differ from the departmental requirements, these take precedence.

Courses are available in several other departments (notably Aerospace Engineering and Applied Mechanics, Computer & Information Science, Mechanical of elasticity, plasticity, visco-elasticity, plates and shells,Engineering (Applied Mechanics), and Industrial & Systems Engineering) which deal with subjects in areas stability, dynamics, continuum mechanics, and optimization and mathematical programming techniques. Available within the department is a wide variety of graduate level courses in areas other than structures, such as Geotechnical Engineering and Transportation Engineering from which a suitable selection can readily be made to form a minor field of study.

MS DEGREE

Mathematics requirements (5 credit hours) may be chosen from Mathematics, Statistics, Industrial Systems Engineering, and Computer and Information Science, taken from Table C below. For those MS applicants who plan to continue into the Ph.D. program, we recommend **ten (10) credit hours of mathematics and/or statistic, Industrial Systems Engineering, or computer and information science, selected from Table C**.

PhD DEGREE

For the Ph.D. degree, there are the following two restrictions in the Structures program in addition to the departmental minimum requirements:

- A minimum of 15 hours in mathematics and/or statistics, listed in Table C, out of which not more than 10 hours of 500-level course work shall apply toward the fulfillment of the minimum. These courses, along with those chosen from Tables A & B, must constitute a coherent program of study in the major field, satisfactory to the student's Advisory Committee.

- A minimum of 20 hours in an approved minor area. Currently, structures-approved minor areas include: mathematics, statistics, computer science, systems engineering, and any other permitted by department graduate rules and by the student's Advisory Committee. The minor area outside of Civil Engineering must not contain more than 10 hours of 500-level course work. At least one course at the 700-level or higher must be included in this selection.

TABLE A

CE830	Earthquake Engineering	5
CE 831	Advanced Reinforced Concrete	5
CE 832	Adv Design/ Behavior of Metal Structures.	5
CE 836	Advanced Matrix Structural Analysis	5
CE 837	Advanced Structural Dynamics	5
CE 839	Finite Element Method in Eng Science	5
CE 852	Advanced Civil Engineering Materials	4
CE 855	Soil-Structure Interaction	4
CE 856	Viscoelasticity	4
CE 858	Soil Dynamics	4
CE 862	Adv Mechanics of Structural Composites	3
ME 800	Methods of Engineering Analysis	3
ME 835	Random Vibrations	3
ME 840	Theory of Continuous Media	3
ME 843	Advanced Elasticity	3
ME 844	Advanced Fracture Mechanics	3
ME 847	Theory of Plasticity	3
ME 855	Advanced Shells	3
ME 864	Theory of Viscoelasticity	3

TABLE B

CE 731	Intermediate Reinforced Concrete Design	4
CE 734	Dynamic Structural Analysis & Design	5
CE 735	Matrix Structural Analysis	4
CE 736	Bridge Engineering	4
CE 737	Prestressed & Precast Concrete	4
CE 738	Intermediate Structural Steel Design	5
CE 739	Knowledge-based Systems in Engineering	3
CE 751	Principles of Found. Analysis & Design	4
CE 762	Structural Composites	3
CE 768	Intro to the Finite Element Method	4
ME 627	Experimental Methods in Mechanics	3
ME 633	Vibrations Laboratory	3
ME 644	Engineering Fracture Mechanics	3
ME 712	Energy Principles in Mechanics	3
ME 731	Vibrations of Discrete Systems	4
ME 732	Nonlinear Vibrations	3
ME 740	Elasticity	4
ME 743	Introduction to Continuum Mechanics	4
ME 751	Elastic Stability	3
ME 754	Plates & Shells	4

TABLE C

Mathematics 512 and up (excluding 530, 610, 630, 631, 632)
Computer & Information Sciences 621, 640, 642, 721
Industrial Systems and Engineering 702, 703, 755, 831, 832
Statistics 520, 521, and up (excluding 600); 525 will count as 3 credit hours only.

PLAN B IS NOT AVAILABLE IN THE STRUCTURES OPTION