

## CURRICULUM

The Civil Engineering PhD program includes courses and research in structural analysis and design, geotechnical engineering and foundations, transportation planning and operations, traffic engineering, water resources engineering and construction engineering and management. This will prepare students for roles in consulting firms, construction and construction-related industries and academic institutions as well as in city, county, state and federal government agencies.

### Total Credit Hours Required:

72 Credit Hours Minimum beyond the Bachelor's Degree

42 Credit Hours Minimum beyond the Master's Degree

The PhD in Civil Engineering is a research-oriented degree that requires course work combined with intensive research. The program requires a minimum of 72 credit hours beyond the bachelor's degree. Thirty of the 72 credit hours can be met with either a nonthesis or thesis MS in Civil Engineering. This leaves 42 credit hours of which 18 credit hours must be Dissertation Research, a maximum of 9 credit hours can be Doctoral Research hours, and a minimum of 15 credit hours must be formal coursework. Up to 6 credit hours of the Doctoral Research can be replaced by independent study, or up to 9 credit hours can be replaced by additional formal coursework.

For students not having an MS degree who directly enter the PhD program (BS to PhD), there will be a minimum of 45 hours formal coursework (i.e., 30 credit hours identical to the coursework for a nonthesis MS in any of the Civil Engineering focus areas plus a minimum of 15 credit hours coursework past the MS). In addition, these students can enroll for Doctoral Research credit hours during or after their first semester in the program. The 27 credit hours required in addition to the 45 credit hours coursework will be 18 credit hours in Dissertation Research, and a maximum of 9 credit hours in Doctoral Research. Up to 6 credit hours of the Doctoral Research can be replaced by independent study, or up to 9 credit hours can be replaced by additional formal coursework subject to the approval of the PhD adviser and the advisory committee.

For both MS to PhD and BS to PhD students, the program of study must be developed with an advisory committee and meet with departmental approval at the beginning of the PhD program, at which time transfer credit will be evaluated on a course-by-course basis.

## Elective Courses—54 Credit Hours Minimum

## Program PROFILE

### Student Profile

Anurag Pande



[Read Profile +](#)

Rongjie Yu

Engy Serag

[Faculty Profile](#)

[Program Stats](#)

### Contact INFO

## Graduate Program

David Cooper PhD

Professor

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Telephone: 407-823-2388

ENG2 227 [Map](#)

## Graduate Admissions

Kory Kilgore

[gradadmissions@ucf.edu](mailto:gradadmissions@ucf.edu)

Telephone: 407-823-2766 ext. 254

Millican Hall 230 [Map](#)

[Online Application](#)

[Graduate Admissions](#)

### Mailing Address

UCF College of Graduate Studies

Millican Hall 230

PO Box 160112

Orlando, FL 32816-0112

### Institution Codes

GRE: 5233

GMAT: RZT-HT-58

TOEFL: 5233

ETS PPI: 5233

## Graduate Fellowships

- To be approved by a faculty adviser.
- At least 27 credit hours of formal course work is required, exclusive of research and independent study. For students entering the program with a master's degree, at least 15 of the 27 credit hours must be taken at UCF after the master's program, exclusive of independent study and research, and taken from approved formal courses. For students entering the program without a master's degree in Civil Engineering or a closely related discipline, at least 45 credit hours of formal course work is required.
- Doctoral Research (XXX 7919) - 9 credit hours maximum (more than 9 research credit hours can be taken, but up to 9 credit hours only can be counted toward the program of study).
- Independent Study (XXX 6908) - 6 credit hours maximum (more than 6 independent study credit hours can be taken, but up to 6 credit hours can be counted toward the program of study).
- No more than a total of 12 credit hours of doctoral research plus independent study can be included in a program of study.
- Directed Research (XXX 6918) is not permitted in a PhD program of study.

Students can choose among the following courses with the consent of the academic adviser. Students that have no MS degree should complete the core courses for the MS degree in the respective focus area. These technical areas are: Structural Engineering, Geotechnical Engineering, Transportation Systems Engineering, Water Resources Engineering and Construction Engineering. For each one of these areas there is a suggested list of core courses.

Suggested elective courses include:

### ***Geotechnical Engineering***

- **CEG 5700** Geo-Environmental Engineering (3 credit hours)
- **CEG 6065** Soil Dynamics (3 credit hours)
- **CEG 6115** Foundation Engineering (3 credit hours)
- **CEG 6317** Advanced Geotechnical Engineering (3 credit hours)
- **CES 6170** Boundary Element Methods in Civil Engineering (3 credit hours)
- **TTE 5835** Pavement Design (3 credit hours)

### ***Structural Engineering***

- **CES 5144** Matrix Methods for Structural Analysis (3 credit hours)

#### **Grad Fellowships**

Telephone: 407-823-0127

[gradfellowship@ucf.edu](mailto:gradfellowship@ucf.edu)

[www.graduate.ucf.edu](http://www.graduate.ucf.edu)

#### **Graduate Financial Aid**

##### **UCF Student Financial Assistance**

Millican Hall 120

Telephone: 407-823-2827

Appointment Line: 407-823-5285

Fax: 407-823-5241

[finaid@ucf.edu](mailto:finaid@ucf.edu)

<http://finaid.ucf.edu>

- [CES 5325 Bridge Engineering \(3 credit hours\)](#)
- [CES 5606 Advanced Steel Structures \(3 credit hours\)](#)
- [CES 5706 Advanced Reinforced Concrete \(3 credit hours\)](#)
- [CES 5821 Masonry and Timber Design \(3 credit hours\)](#)
- [CES 6010 Structural Reliability \(3 credit hours\)](#)
- [CES 6116 Finite Element Structural Analysis \(3 credit hours\)](#)
- [CES 6209 Dynamics of Structures \(3 credit hours\)](#)
- [CES 6220 Wind and Earthquake Engineering \(3 credit hours\)](#)
- [CES 6230 Advanced Structural Mechanics \(3 credit hours\)](#)
- [CES 6527 Nonlinear Structural Analysis \(3 credit hours\)](#)
- [CES 6715 Prestressed Concrete Structures \(3 credit hours\)](#)
- [CES 6840 Composite Steel Concrete Structures \(3 credit hours\)](#)

### ***Transportation Systems Engineering***

- [TTE 5204 Traffic Engineering \(3 credit hours\)](#)
- [TTE 6205 Highway Capacity \(3 credit hours\)](#)
- [TTE 5805 Geometric Design of Transportation Systems \(3 credit hours\)](#)
- [TTE 5835 Pavement Design \(3 credit hours\)](#)
- [TTE 5256 Traffic Operations \(3 credit hours\)](#)
- [TTE 6270 Intelligent Transportation Systems \(3 credit hours\)](#)
- [TTE 6315 Traffic Safety Analysis \(3 credit hours\)](#)
- [TTE 6526 Planning and Design of Airports \(3 credit hours\)](#)
- [CGN 6655 Regional Planning, Design and Development \(3 credit hours\)](#)
- [STA 5206 Statistical Analysis or ESI 5219 Engineering Statistics \(3 credit hours\)](#)

### ***Water Resources Engineering***

- [CWR 5125 Groundwater Hydrology\(3 credit hours\)](#)
- [CWR 5205 Hydraulic Engineering\(3 credit hours\)](#)
- [CWR 5515 Numerical Methods in Civil and Environmental Engineering \(3 credit hours\)](#)
- [CWR 5545 Water Resources Engineering \(3 credit hours\)](#)
- [CWR 5634 Water Resources in a Changing Environment \(3 credit hours\)](#)
- [CWR 6235 Open Channel Hydraulics \(3 credit hours\)](#)
- [CWR 6236 River Engineering and Sediment Transport \(3 credit hours\)](#)
- [CWR 6535 Modeling Water Resources Systems \(3 credit hours\)](#)
- [CWR 6102 Advanced Hydrology \(3 credit hours\)](#)
- [CWR 6126 Groundwater Modeling \(3 credit hours\)](#)
- [CWR 6539 Finite Elements in Surface Water Modeling \(3 credit hours\)](#)

## **Construction Engineering and Management**

- CCE 5937 Decision Support for Infrastructure Projects (3 credit hours)
- CCE 5937 Infrastructure Systems Management (3 credit hours)
- CCE 5937 Green Design and Construction (3 credit hours)
- CCE 6938 Advanced Construction Planning and Control (3 credit hours)
- CCE 6938 Design and Monitoring of Construction Processes (3 credit hours)
- CCE 6938 Cost Engineering of Sustainable Infrastructure Systems (3 credit hours)

Students are also allowed to take courses from other specialization areas. Students can take courses from Civil Engineering or Environmental Engineering and other departments, including but not limited to Statistics, Mathematics, Industrial, Mechanical and Electrical Engineering, and Computer Science, with the consent of the academic adviser.

## **Dissertation—18 Credit Hours**

- XXX 7980 (where XXX can be CGN, CEG, CES, CWR, or TTE; 18 credit hours)

## **Examinations**

The student must pass three examinations.

### **Qualifying Examination**

The first is the PhD Qualifying Examination in one of the departmental disciplines. This written examination must be taken within the first year of study beyond the master's degree.

### **Candidacy Examination**

The student must pass a Candidacy Examination, normally taken near the end of the course work. It consists of a written and oral presentation of a research proposal. A copy of the written examination will be kept as part of the student's official record.

### **Admission to Candidacy**

The following are required to be admitted to candidacy and enroll in dissertation hours. Evidence that items have been completed must be received by the College of Graduate Studies on the Friday before the first day of classes for those who wish to enroll in

dissertation hours in that semester:

- Completion of all course work, except for dissertation hours.
- Successful completion of the candidacy examination.
- Successful defense of the written dissertation proposal.
- The dissertation advisory committee is formed, consisting of approved graduate faculty and graduate faculty scholars.
- Submittal of an approved program of study.

## Dissertation Defense Examination

The Dissertation Defense Examination is an oral examination taken as defense of the written dissertation.

The College of Engineering and Computer Science requires that all dissertation defense announcements are approved by the student's advisor and posted on the college's [website](#) at least two weeks before the defense date and on the College of Graduate Studies [Events Calendar](#).

## Equipment Fee

Students in the Civil Engineering PhD program pay a \$16 equipment fee each semester that they are enrolled. Part-time students pay \$8 per semester.

## INDEPENDENT LEARNING

The Independent Learning Requirement is met by successful completion of the student's candidacy and dissertation defense examinations.

## APPLICATION REQUIREMENTS

For information on general UCF graduate admissions requirements that apply to all prospective students, please visit the [Admissions](#) section of the Graduate Catalog. Applicants must [apply online](#). All requested materials must be submitted by the established deadline.

The College of Engineering and Computer Science strongly encourages prospective applicants to submit a free pre-screening ([www.cecs.ucf.edu/prescreen](http://www.cecs.ucf.edu/prescreen)) of their qualifications prior to submitting an online application for graduate admission. However, a pre-screening is not required; rather, it is offered as a courtesy to all prospective applicants before they commit to submitting a complete online application and paying the application processing fee.

Admissions decisions are made on the basis of a complete online

application only, and not on the basis of any pre-screening.

Prospective applicants who are encouraged to apply to their intended graduate program based on the information provided for their pre-screening are not assured of admission or financial assistance when they submit a complete online application. Although it is possible, it is not likely, that prospective applicants who are discouraged from formally applying to a graduate program at the pre-screening stage will be admitted if they elect to submit a complete online application anyway.

In addition to the [general UCF graduate application requirements](#), applicants to this program must provide:

- One official transcript (in a sealed envelope) from each college/university attended.
- Official, competitive GRE score taken within the last five years.
- Master's or bachelor's degree in Civil Engineering or a closely related discipline.
- Résumé.
- Statement of educational, research, and professional career objectives.
- Three letters of recommendation.

Applicants to this program are strongly encouraged to complete the necessary information requested for the ETS PPI (Personal Potential Index) report that is available during the GRE examination. All official PPI reports must be submitted directly to the UCF College of Graduate Studies (use UCF Institution Code: 5233).

Faculty members may choose to conduct face-to-face or telephone interviews before accepting applicants into their research program.

## Application Deadlines

Civil Engineering PhD	Fall Priority	Fall	Spring	Summer
<b>Domestic Applicants</b>	Jan 15	Jul 15	Dec 1	-
<b>International Applicants</b>	Jan 15	Jan 15	Jul 1	-
<b>International Transfer Applicants</b>	Jan 15	Mar 1	Sep 1	-

## FINANCIALS

Graduate students may receive financial assistance through fellowships, assistantships, tuition support, or loans. For more information, see the College of Graduate Studies [Funding website](#), which describes the types of financial assistance available at UCF and provides general guidance in planning your graduate finances. The [Financial Information](#) section of the Graduate Catalog is another

key resource.

## Fellowships

Fellowships are awarded based on academic merit to highly qualified students. They are paid to students through the Office of Student Financial Assistance, based on instructions provided by the College of Graduate Studies. Fellowships are given to support a student's graduate study and do not have a work obligation. For more information, see [UCF Graduate Fellowships](#), which includes descriptions of university fellowships and what you should do to be considered for a fellowship.