HANDBOOK FOR GRADUATE STUDENTS

IN

CIVIL ENGINEERING

2012 - 2013

UNIVERSITY OF KENTUCKY
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# Table of Contents

SECTION I - GENERAL PROCEDURES ................................................................. 1

1. Classification of Students ........................................................................... 1
   a. Post-Baccalaureate Students ................................................................. 1
   b. Degree Students - Provisional Admission .............................................. 1
   c. Degree Students - University Scholar Program .................................... 2
   d. Degree Students - Regular Students ..................................................... 2

2. Admission Requirements for Degree Students ......................................... 2

3. Activities Prior to Admission ..................................................................... 2
   a. Information on Available Programs ...................................................... 2
   b. Graduate Record Examination (GRE) ................................................... 2
   c. Test of English as a Foreign Language .................................................. 3
   d. Application for Admission .................................................................... 3
   e. Non-CE Background ............................................................................ 3
   f. ABET/EAC Professional Component .................................................... 4
   g. Application for Financial Aid ................................................................. 4

4. Activities Following Admission but before Beginning of Class Work ....... 5
   a. Assignment of a Faculty Advisor ......................................................... 5
   b. Program Planning ................................................................................. 5
   c. Classification and Registration ............................................................. 5
   d. Office Space ....................................................................................... 5

5. Activities After Enrollment ....................................................................... 5
   a. Proposed Program ............................................................................... 5
   b. Priority Registration ............................................................................ 5
   c. Current Student Information ................................................................ 5
   d. Readmission ....................................................................................... 6
   e. Incomplete Grades .............................................................................. 6
   f. Repeat Option .................................................................................... 6
   g. Scholastic Probation .......................................................................... 6
   h. Admission to Candidacy ...................................................................... 6
   i. Application for Degree ....................................................................... 6
   j. Time Limits for Degrees ................................................................. 6

6. Course Load ............................................................................................. 7
   a. Regular Semester .............................................................................. 7
   b. Summer Term ................................................................................... 7
7. Program and Course Offerings
   a. Civil Engineering Specialties Available
      in the Graduate Program
   b. Course Descriptions of Graduate Courses
      offered in the Department
   c. Faculty Members and their Specialties
   d. Core Courses

8. Course Scheduling
   a. Courses Offered Every Semester
   b. Courses Offered Every Fall Semester
   c. Courses Offered in Fall Semester Occasionally
   d. Courses Offered in Every Spring Semester
   e. Courses Offered in Spring Semester Occasionally
   f. Courses Offered Periodically

9. Graduate School Fellowships
   a. CSX, Durr, Garver, Nichols, Raymond-Terrell, Vaughn-Melton,
      Walker, Harp Fellowships
   b. Presidential Fellowships
   c. Open Competition Academic Year Fellowships
   d. Lyman T. Johnson Minority Fellowships
   e. Otis A. Singletary and W. L. Matthews, Jr. Fellowships
   f. Dissertation Year Fellowships
   g. Other Fellowships

10. Special Fellowships and Graduate Assistantships
    a. Advanced Institute for Transportation Systems Science Fellowship
    b. Environment and Systems Graduate Assistantships

SECTION II - MASTERS PROGRAMS

1. Program Options
   a. MSCE Program Plan A (24 Hour Plus Thesis Option)
   b. MSCE Program Plan B (30 Hour Non-Thesis Option)
   d. University Scholars Combined BS-MS Program

2. Residence Requirements
   a. On-Campus Residence
   b. Transfer of Credits
   c. Correspondence Work

3. Course Requirements
   a. Program Approval
   b. Deficiencies
   c. Requirements by Course Numbering
   d. Requirements for CE/EGR Area
   e. Grades
   f. Transfer from Other Graduate Degree Programs
4. Thesis Requirements ........................................................................................................... 21

5. Independent Work Courses - CE 790 and CE 791 ........................................................... 21

6. Final Examination ........................................................................................................... 22
   a. For the 24 Hour Plus Thesis MSCE Option ................................................................. 22
   b. For the 30 Hour Non-Thesis MSCE Option ................................................................. 22

7. Graduation Fees .............................................................................................................. 22

8. Concurrent Degree Programs ......................................................................................... 22

SECTION III - THE DOCTOR OF PHILOSOPHY (Ph.D.) PROGRAM ................................. 23

1. Course Requirements ...................................................................................................... 23

2. Major Professor ............................................................................................................... 23

3. Advisory Committee ...................................................................................................... 23

4. Change in Membership of Advisory Committee ........................................................... 23
   a. Changes in Student Interest or Emphasis ..................................................................... 23
   b. Faculty Resignations From Committee ....................................................................... 23
   c. Faculty Turnover and Leave ....................................................................................... 24

5. Language Requirements ................................................................................................ 24

6. Qualifying Examination .................................................................................................. 24

7. Residence Requirement ................................................................................................. 24
   a. Actual Presence on Campus ....................................................................................... 24
   b. Post Qualifying Examination Residence Requirements ........................................... 24

8. The Dissertation ............................................................................................................. 25

9. Graduation Fees ............................................................................................................. 25

10. Final Examination ......................................................................................................... 25
    a. Composition of Committee ...................................................................................... 25
    b. Scheduling of Examination ...................................................................................... 25
    c. Procedure ................................................................................................................. 26

11. Submission of Dissertation .......................................................................................... 26

SECTION IV - GUIDELINES FOR ASSISTANTSHIPS ...................................................... 26

1. Terminology .................................................................................................................... 26

2. Responsibilities .............................................................................................................. 26
3. Period of Appointment
   a. Assistantships (TA, RA) ..............................................27
   b. Absences ..................................................................27

4. Service Load
   a. Teaching Assistants (TA), Research Assistants (RA) ..........27
   b. Service Load for TA/RA .............................................27

5. Selection and Appointment of TA, RA
   a. Application for Assistantships ......................................28
   b. Appointment Criteria ..................................................28

6. Renewal and Termination of Appointments
   a. Renewal of Appointment for Graduate & Research Assistants ...............................................29
   b. Maximum Periods of Appointment ................................29
   c. Renewal of Assistantships ..........................................29

7. Multiple Sources of Financial Aid/Employment .....................29

8. Parking Privileges ..........................................................29

9. Holidays, Vacations, and Sick Leave ....................................29

SECTION V – HELPFUL TIPS ..................................................30

APPENDIX - A – CE Graduate Programs: Learning Outcomes (MSCE and Ph.D.) .................31

APPENDIX - B - Financial Support Application ..........................33
HANDBOOK FOR GRADUATE STUDENTS IN CIVIL ENGINEERING

Welcome to graduate studies in UK Civil Engineering. This handbook is intended to acquaint prospective, new, and continuing graduate students with the opportunities and requirements for graduate study and graduate degrees in the Department of Civil Engineering at the University of Kentucky. This handbook supplements the Graduate School Bulletin and the general University Catalog, with which students should also become familiar. For additional information, or explanation of matters that may remain unclear, please contact the Director of Graduate Studies, Department of Civil Engineering, University of Kentucky, Lexington, KY 40506-0281. Phone: (859) 257-4856 or FAX (859) 257-4404 www.research.uky.edu/gs/ and www.engr.uky.edu/ce/. All applications for admission, transcripts, etc. must be submitted directly to the UK Graduate School, 106 Gillis Building, Lexington, KY 40506-0033; Phone: (859) 257-4613; Fax: (859) 323-1928. It is the responsibility of the student to become very familiar with UK rules, and various deadlines.

SECTION I: GENERAL PROCEDURES

1. Classification of Students

Currently, the Graduate School classifies students in one of two categories: Post-Baccalaureate Students, or Degree Seeking Students.

a. Post-Baccalaureate Students

Students who hold a baccalaureate degree and wish to pursue graduate study without a degree objective, and students who do not fulfill the entrance requirements of the Graduate School or of the Department, may apply for admission as Post-Baccalaureate Students. Admission to this status may be granted to an applicant who (1) demonstrates promise but has not qualified for admission to a degree program, or (2) intends not to complete a degree program. Only nine (9) hours of courses taken as a Post-Bacc student at UK may be counted toward a graduate degree if the students were to switch his/her status to regular admission. All such courses must be completed with a grade of "B" or better. The Director of Graduate Studies and the Dean of the Graduate School must approve all transfers of credit hours to a graduate program (see Transfer of Credit, Section II-2b).

b. Degree Students - Provisional Admission

A student who wishes to pursue a higher degree, but who, for one or more of the reasons listed below, is temporarily ineligible for regular admission status, may be recommended to the Graduate School by the Director of Graduate Studies for admission to the degree program in Provisional Status:

(1) Missing transcripts or other requirements for admission, such as diplomas or certificates.
(2) Temporary waiver of the Graduate Record Examination (to be presented before the end of the first semester of enrollment in Graduate School).
(3) Deficiencies of undergraduate courses in civil engineering.
(4) Temporary ineligibility for regular admission status because a prerequisite degree has not yet been officially awarded.
(5) Graduating University of Kentucky seniors lacking no more than six (6) hours for graduation; the consent of the Dean of the College of Engineering and the Dean of the Graduate School and approval of the Director of Graduate Studies is necessary. Such students may take no more than twelve (12) credit hours and must complete the undergraduate degree during the semester in which he/she is enrolled in Graduate School in the provisional status.

A student may remain in provisional status for a maximum of one semester or up to twelve (12) hours, whichever comes earlier. After this time, the student's work will be reviewed. Within 30 days into the following semester, and on recommendation of the Director of Graduate Studies, the student will be moved to regular admission status, or removed from the graduate program. Granting provisional admission is entirely based upon the discretion of the Director of Graduate Studies.
c. Degree Students - University Scholars Program
The University Scholars Program in Civil Engineering is a combined BSCE-MSCE program for our most gifted and highly motivated students currently enrolled in our undergraduate program. It offers these students the opportunity and challenge of integrating their undergraduate and graduate courses of study into a single, continuous program, leading to both degrees.

d. Degree Students - Regular Students
Degree students and regular students must satisfy all requirements for admission and be accepted by the Graduate School, and Civil Engineering program.

2. Admissions Requirements for Degree Students

Applicants seeking admission to the Graduate programs in Civil Engineering as regular students must have been awarded a baccalaureate degree from an engineering (not engineering technology) program, accredited by the Engineering Accreditation Commission of Accreditation Board for Engineering and Technology (ABET/EAC), or equivalent agency. Engineering Technology degree holders will not be admitted. Also, students must have an undergraduate grade point average (GPA) of at least 2.8 on a 4.0 scale, a combined verbal and quantitative scores of GRE as follows: 1000 (New GRE: 300), and 1100 (New GRE: 315) for Master's and Ph.D. degree applicants, respectively. Scores on the analytical portion are not considered. In addition, an applicant whose native language is other than English must score at least 550 (paper-based TOEFL) or 213 (computer-based TOEFL) or 80 (internet-based TOEFL).

Applicants who have been awarded bachelor degrees in fields other than engineering, such as physical sciences, need to contact the Director of Graduate Studies for consultation. These students may be able to get admitted to the CE graduate program; however, they need to be aware that they may not be able to obtain a Professional Engineer (PE) license with their MSCE. Students with an undergraduate major other than Civil Engineering must also take undergraduate remedial courses (see Section I-3e), and consult with the appropriate Board of Registration regarding their licensing prospects.

Students seeking admission to the University Scholar Program may apply for entry to the program after completing at least 90 credit hours of the undergraduate Civil Engineering curriculum including all University Studies requirement courses. No less than 30 of these credit hours must be in CE prefix courses. The students must also have an overall undergraduate GPA no less than 3.2, and a GPA no less than 3.5 for all CE prefix courses at the time they apply for admission to the program. They must also take the Graduate Record Examination, and the scores must be available prior to entry. This program is only available to the currently enrolled undergraduates on the University of Kentucky campus. (Also see Section I-1d)

3. Activities Prior to Admission

a. Information on Available Programs
Inquiries about available programs should be addressed to the Director of Graduate Studies, Department of Civil Engineering. In addition to the application forms for admission and financial aid, information on Graduate Study and Research in Civil Engineering is available to potential applicants.

b. Graduate Record Examination
All applicants for admission as regular students must submit scores on the aptitude portions (verbal and quantitative) of the regular Graduate Record Examination (GRE). Applications who take the GRE must be submitted approximately three weeks before the date of the Examination, and the results of the Examination are available in approximately six weeks. Inquiries should be addressed to the University Counseling and Testing Center, or to the Educational Testing Service in Princeton, New Jersey. www.ets.org/gre/

To be admitted, applicants must have a combined verbal and quantitative scores of GRE as follows: 1000 (New GRE: 300), and 1100 (New GRE: 315) for Master's and Ph.D. degree applicants, respectively. Scores on the analytical portion are not considered. Applicants without GRE scores or with GRE scores less than the required minimum may be admitted provisionally if permission is received from the Director of Graduate Studies, and if it is approved by the Dean of the Graduate School. Such students must then take the GRE and obtain at least the
minimum passing score during their first semester on campus, failing that; they will be dropped from the program.

c. Test of English as a Foreign Language
An applicant whose native language is other than English must submit scores from the Test of English as a Foreign Language. The minimum acceptable score is at least 550 (paper-based TOEFL) or 213 (computer-based TOEFL) or 80 (internet-based TOEFL).

d. Application for Admission
Applicants for admission as regular students, who reside in the United States, must submit complete applications with accompanying materials to the Graduate School Admissions Office three months before the beginning of the semester in which the applicant intends to begin graduate work. Applicants from outside the United States must apply by February 1 for Fall admission, and June 15 for the Spring semester. At the time of the application, the applicant must have an official copy of the GRE scores, and two complete sets of official transcripts from all institutions of higher learning previously attended (including the University of Kentucky), sent directly from the issuing offices to the Graduate School Admissions Office. The UK Graduate School’s website will accept applications on-line. *Sending the original application materials directly to the CE Department will only delay the admission process.*

Applications for admission to the Graduate School as a University Scholar should also complete additional forms; (available at the CE office, as well as on-line), which must be approved by the Director of Graduate Studies, the Associate Dean of Undergraduate Studies as well as the Dean of Graduate School. The application for the University Scholars program should be submitted before entering the senior year.

Applications for admission to the Graduate School as a post-baccalaureate student should be on file in the Admissions Office at least 30 days in advance of the registration date of the semester in which the student plans to enroll.

Post-baccalaureate students who wish to apply for a graduate program must have a minimum 3.0 grade-point average on all work attempted as post-baccalaureate students. Application to the program should be made to the Graduate School Admissions Office by the calendar deadlines.

Post-baccalaureate students have one month after the start of a semester to be admitted to a degree program in the Graduate School. After this time a student must wait until the following semester.

Permission to enter any graduate class as a post-baccalaureate student will be granted only if the student meets the prerequisites and if space is available.

e. Non-CE Background
Students whose undergraduate program was not in Civil Engineering should be aware that they must take some undergraduate remedial courses prior to graduating, in order to meet the minimum background expected of graduate Civil Engineers.

The list of remedial courses or equivalent courses as determined by the Director of Undergraduate studies consists of the following:

- MA113, MA114, MA213, & MA214
- PHY231 & PHY232, lab optional
- CHE 105 & CHE107, lab optional
- EM221, EM302, and ME 220 or EM 313
- Civil Engineering electives: Four (4) courses to be decided by the student’s advisory committee. These four courses should be selected in at least three (3) among the following civil engineering areas: civil engineering materials, construction engineering and management, environmental engineering, geotechnical engineering, hydraulics and water resources engineering, structural engineering, and transportation engineering.
Depending on their GRE scores, students may be admitted provisionally to the graduate program while completing remedial courses. Students must obtain passing grade in all remedial courses to maintain provisional acceptance. Equivalent courses can also be used to satisfy these requirements; for PhD students, equivalency can be established based upon the advisory committee’s recommendations.

Graduate students admitted under this option should also understand that satisfying the above requirements might not fulfill the Professional Engineering registration requirements in Kentucky or other states. Listed below are the minimal ABET/EAC degree requirements. A student who completes these requirements may request a waiver from the Kentucky Registration Board for Professional Engineers. Graduate students who complete the minimal ABET/EAC requirements and the master’s degree requirements may be supported in their petition to waive the ABET/EAC degree requirement by the Department of Civil Engineering. If such a waiver petition is successful, the student will be permitted to take the Fundamentals in Engineering/Engineer in Training (FE/EIT) exam. Passing the FE/EIT exam allows the engineer-in-training to take the Professional Practice exam after completing the requisite number of years of professional practice experience.

f. ABET/EAC Professional Components

(1) General
   (a) One year of a combination of college level mathematics and basic sciences (some with experimental experience) appropriate to the discipline.
   (b) One and one-half years of engineering topics, to include engineering sciences and engineering design appropriate to the student’s field of study
   (c) A general education component that complements the technical contents of the curriculum and is consistent with the program and institution objectives.

(2) Civil Engineering
   (a) Proficiency in mathematics through differential equations, probability and statistics, calculus-based physics, and general chemistry.
   (b) Proficiency in a minimum of four recognized major civil engineering areas.
   (c) Ability to conduct laboratory experiments and to critically analyze and interpret data in more than one of the recognized major civil engineering areas.
   (d) Ability to perform civil engineering design by means of design experiences integrated throughout the professional component of the curriculum.
   (e) Understanding of professional practice issues such as: procurement of work; bidding versus quality based selection processes; how the design professionals and the construction professionals interact to construct a project; the importance of professional licensure and continuing education; and/or other professional practice issues.

g. Application for Financial Aid
The UK Graduate School’s web site lists numerous financial support opportunities, and all qualified students are encouraged to apply. Applications for fellowships and/or Assistantships should be submitted on the required forms to the Graduate School Admissions Office before February 1 of the year in which admission is desired. A limited amount of funding is available through the Department of Civil Engineering (see Sections 1-9, and 1-10). Additionally, applications for departmental assistantships (the last two pages of this Handbook) should be submitted to the Director of Graduate Studies by February 1 for Fall admissions and October 15 for Spring admissions.
4. Activities Following Admission but before Beginning of Class Work

a. Assignment of a Faculty Advisor

The Director of Graduate Studies serves as the initial advisor to each student majoring in Civil Engineering during the first semester. However, it is very important for the graduate student to work very closely with a faculty advisor in his/her area of interest as soon as possible. In consultation with his/her advisor, the student needs to form an advisory committee by the second semester in compliance with the Graduate School rules.

b. Program Planning

Before or immediately upon arrival on campus, all students should begin to plan their detailed programs of study in consultation with the Director of Graduate Studies and their faculty advisor. Such planning at this early stage is rather informal and subject to future modification. If a complete program cannot be worked out at this time, the courses to be taken during the first semester should be selected, while the student is working on getting the rest of the course plan approved by his/her advisor.

c. Classification and Registration

New and readmitted students register during the week prior to the start of classes. See Schedule of Classes online for dates and deadlines. New students are informed of the dates at the time of acceptance. Continuing students who failed to priority register as well as new and readmitted students, who applied after the deadline, must late register during the first week of classes.

d. Office Space

A limited amount of office space is available for the use of graduate students (contact the CE office staff). Priority is always given to teaching and research assistants.

5. Activities after Enrollment

a. Proposed Program

Each graduate student, in consultation with their designated faculty advisor, should prepare and obtain approval for a proposed program. This should be accomplished as early as possible in the student's program, and in no case later than the advance registration for the second semester of graduate studies. The primary purpose of this effort is to help all students precisely define their educational objectives, and to assure that they are fully aware of University and departmental degree requirements. In addition, it serves to commit the department to what it considers to be an acceptable program for each student. It should be emphasized that the academic work plan can, and often will, be changed as the student progresses.

b. Priority Registration

Priority registration is for continuing students only. Current students must priority (advance) register; failure to do so incurs a penalty for late registration. This rule applies to students in post-baccalaureate status as well as to students in degree programs. All students are assigned a three-day registration window. Before registering graduate students should obtain approval of their proposed schedule from their advisor. The advance registration period provides a good opportunity for periodic reevaluation of the student's program of instruction.

c. Current Student Information

At the beginning of each semester, the student should update his/advisor regarding course and research progress, as well as plans for future.
d. Readmission
A student, who does not enroll for a semester during an academic year, must apply to the Graduate School for readmission by the stated deadline before subsequent enrollment will be permitted.

A student who has been inactive for a regular semester, but who is in good academic standing and has been enrolled in a graduate program within the previous three regular semesters, may request and will be granted full readmission by the Graduate School.

A student who is admitted to a graduate program, but unable to matriculate in the specified term, may request a one year deferment. Depending on the circumstances, the CE Department may or may not grant such a deferment.

e. Incomplete Grades
All incomplete grades must be removed from the student's record before scheduling the Final Examination and the awarding of a degree. Removal may be accomplished in two ways:

(1) Complete the requirements for the course and receive a letter grade.

(2) Provide the Dean of the Graduate School with letters from the student's advisor or the Committee Chair and the Director of Graduate Studies, stating that the incomplete course is no longer part of the student's program.

An incomplete grade "I" will automatically be changed to a failing grade "F" if not removed/changed within a year from the date when the grade was assigned.

f. Repeat Option
A student may repeat a graduate course and count only the second grade as part of the graduate grade point average. This action will be initiated by petition of the Director of Graduate Studies to the Graduate Dean and may be done only once in a particular degree program.

g. Scholastic Probation
When students have completed 9 or more semester hours of graduate course with a GPA of less than 3.0, they will be placed on scholastic probation and are subject to dismissal from the program. Students will have one full-term semester or the equivalent (9 hours) to remove the scholastic probation by attaining a 3.0 GPA.

h. Admission to Candidacy
Regular admission to a master's degree program constitutes admission to candidacy for that degree. Admission to candidacy for the Ph.D. degree is automatically granted when the student passes the Qualifying Examination.

i. Application for Degree
To be eligible for a degree, the student must file an application at the Graduate School within 30 days before the semester in which he or she expects to graduate (15 days in the summer session). The student must obtain the application forms from the Graduate School’s web site.

j. Time Limits for Degrees

**Masters Degrees.** Activities used to satisfy degree requirements must be completed within **eight years** preceding the proposed date of graduation. Extensions of time will be considered by the Graduate Council only upon written recommendation by the student’s advisor and endorsed by the Director of Graduate Studies.

**Doctoral Degree.** All degree requirements for the doctorate must be completed within **five years** following the semester or summer session in which the candidate successfully completes the Qualifying Examination. In the event that all degree requirements are not met during the five-year period, degree candidates who provide evidence of the likelihood of completing the degree during an extension of time may be granted such an extension by the Graduate Council. Requests will be considered only upon written recommendation of the
student's advisor and endorsed by the Director of Graduate Studies. Upon favorable review, an extension of no more than five years may be granted. NOTE: The Graduate School may require the student to take and pass a second Qualifying Exam.

6. Course Load
a. Regular Semester

(1) A full-time student is one enrolled in nine or more semester hours of work.

(2) The maximum load permitted during any semester is 15 semester hours (16 semester hours for University Scholars).

(3) Full-time graduate assistants, whose services to the University require approximately 20 hours per week, may take no more than ten credit hours per semester.

(4) The maximum load for part-time graduate assistants varies with the number of working hours. (See Section IV-4c)

(5) Persons holding full-time working or professional assignments, whether employed by the University or not, may take no more than six credit hours per semester. Under certain circumstances, the student may petition for a waiver of this rule by submitting letters of support from his/her employer and academic advisor.

b. Summer Term

Summer graduate course offerings are limited, and students are encouraged to consult with their advisor about their summer course plans.

7. Program and Course Offerings
a. Civil Engineering Specialties Available in the Graduate Program

All common Civil Engineering specialties may be studied in the Department, most up to the Ph.D. level. There are basically eight broad areas of graduate study and research in the Department:

- Civil Engineering Materials
- Constructions Engineering and Management
- Environmental/Water Quality Engineering
- Geotechnical Engineering
- Hydraulics & Water Resources Engineering
- Structural Engineering
- Transportation Engineering

b. Course Descriptions of Graduate Courses Offered in the Department

500-level courses may be taken by graduate as well as undergraduate students. However, graduate students will be required to complete additional work, or be subjected to a tougher grading policy.

CE 507 CONSTRUCTION SAFETY AND HEALTH. (3)
The course will develop an understanding of safety and health; cost and human impact; hazard and risk analyses; psychological facts of organizational culture and climate; design safe work procedures for the execution of particular types of work; and individual versus management level improvement in safety and health procedures in the construction process. Prereq: Engineering standing and CE 303 or consent of instructor.

CE 508 DESIGN AND OPTIMIZATION OF CONSTRUCTION OPERATIONS. (3, F)
The course critically examines repetitive operations that occur from project to project and the deterministic approaches used to design and optimize their effectiveness. Scientific techniques used to field measure the efficiency of construction operations are also examined. The primary metrics used to optimization include cost, schedule, and sustainability. Prereq: CE 303, CE 381, and engineering standing or graduate standing.
CE 509 CONTROL OF THE CONSTRUCTION PROJECT. (3, Sp)
This course investigates the principles and practices for the control of budget and schedule for construction projects. Topics studied include: estimating construction costs and developing a project budget, planning construction operations and developing a project schedule, documenting and reporting of project progress and spending, and the management of change of contract amount, contract time, and contract scope work. Prereq or coreq: CE 508 or consent of instructor.

CE 517 Boundary Location Principles (3, Spring)
Procedures for locating or relocating the boundaries of real property; records searching, technical aspects of field work, preparation of descriptions and survey reports, land data systems, legal aspects, special problems. Prereq: CE 211 and engineering standing or consent of instructor.

CE 525 Civil Engineering Applications of Geographic Information System (3, Sp)
CE 525 focuses on GIS as a tool in civil engineering. The terms and concepts related to Geographic Information Systems are introduced. The management of spatial databases, particularly those related to civil engineering, is covered. Students will collect data using a global positioning system (GPS) and be introduced to the concepts of photogrammetry and satellite imagery. Students will be required to use the GIS ArcView software to solve a specific individual spatial problem that they propose based on several civil engineering databases available to them.

CE 531 Transportation Systems Operations (3, F)
Analysis of transportation infrastructure problems through diagnostic study of existing transportation systems operations with emphasis on capacity and safety objectives. Engineering practice oriented toward open-ended solutions. Prereq: CE 211, CE 331, and engineering standing.

CE 533 Railroad Facilities Design and Analysis (3, Sp)
Principles of railroad location, construction, rehabilitation, maintenance, and operation with emphasis on track structure design and analysis, bridges and bridge loading, drainage considerations, track geometry effects, and operating systems analysis. Prereq: CE 331, CE 381, CE 382; concur: CE 471G and engineering standing.

CE 534 Pavement Design, Construction and Management (3, F)
Design, analysis, construction and management of flexible and rigid pavements, stresses and strains, pavement materials, subgrade soil stabilization; bases and sub-bases, quality control, drainage, pavement type selection and pavement management. Prereq CE 381 or concur: CE 471G and engineering standing.

CE 539 Transportation Systems Design (3, Sp)
Introduction to the processes and procedures for transportation systems design. Policy design, functional design and sizing, operation and schedule design, location and geometric design, supporting structures design as they individually and collectively affect the efficacy of transportation systems. Written and oral presentation of student projects will be required. Lecture, three hours; laboratory, three hours per week. Prereq: CE 211 or CE 331.

CE 541 Intermediate Fluid Mechanics (3, F)
Application of basic fluid mechanics to problems of importance to civil engineering practice. This includes flow measuring, closed conduit flow and pipe networks, open channel flow, turbo machinery (pumps), hydraulic structures, culvert flow. Prereq: CE 341, CS programming course, and engineering standing or consent of instructor. (Same as BAE 541.)

CE 542 INTRODUCTION TO STREAM RESTORATION. (3, Sp)
Introduction to principles of fluvial geomorphology for application in restoring impaired streams. Topics include channel formation processes (hydrology/ hydraulics), stream assessment, sediment transport, in-stream structures, erosion control, habitat, and monitoring. Prereq: CE 341 (or equivalent) and engineering standing or consent of instructor. (Same as BAE 532.)
CE 546 Fluvial Hydraulics (3, F)
Rainfall physics, principles of erosion on upland areas and construction sites, stable channel design in alluvial material, mechanics of sediment transport, river mechanics, reservoir sedimentation. Prereq: CE 461G, ME 330 and engineering standing.

CE 547 WATERSHED SEDIMENTATION. (3, Sp)
The course objective is to gain an understanding of watershed sedimentation including: (1) erosion and sediment transport processes in a watershed and the mechanisms by which the processes are initiated, developed, and worked towards equilibrium; (2) measurement of the sediment budget for a watershed using sediment fingerprinting and sediment loading data; and (3) prediction of sediment loading in watersheds with different human disturbances using hydrologic-based modeling tools. Specific emphasis will be placed on the use of natural carbon and nitrogen isotopic tracer measurements within sediment fingerprinting as a data-driven approach to measure sediment loading from different sources in a watershed. In order to fulfill the course objective, the instructor will use traditional classroom learning as well as field and laboratory components of the course in order that students can participate in hands-on learning. Prereq: CE 461G (Pre- or Co-requisite or equivalent). (Same as BAE 547.)

CE 549 Engineering Hydraulics (3, Sp)
Analysis of flow in closed conduits and natural and artificial open channels. Design of hydraulic structures. Prereq: CE 541, CE 441 and engineering standing. (Same as BAE 545)

CE 551 WATER AND WASTEWATER TREATMENT ENGINEERING. (3, Sp)
This course examines the scientific and engineering aspects of water and wastewater treatment. Conventional water treatment processes such as rapid mixing, flocculation, sedimentation, filtration, and disinfection as well as biological processes for wastewater treatment are analyzed. Sustainable alternative treatment techniques are also discussed. Prereq: CE 341, CE 351, and engineering standing or consent of instructor.

CE 555 Microbial Aspects of Environmental Engineering (3, F)
Environmental microbiology for engineering students with emphasis on microbially mediated chemical cycles, microbial ecology, and industrial microbiology. Prereq: CHE 105 and 107, engineering standing or consent of instructor.

CE 568 GIS APPLICATIONS FOR WATER RESOURCES. (3)
This course studies the principles, methodology and analysis of geographic information systems and spatially-referenced data unique to water resources and hydrologic modeling. Lectures will explore the latest GIS concepts, hydrologic modeling relationships and data sources and be complimented with computer-based laboratory exercises. Prereq: BAE 437, CE 461G, or consent of instructor. (Same as BAE 538.)

CE 579 Geotechnical Engineering (3, Sp)
Application of the principles of soil mechanics and structural mechanics to the design of retaining walls, bracing for excavations, footings, mat and pile foundations, and to the analysis of the stability of earth slopes. Lecture 3 hours. Prereq: CE471G or equivalent.

CE 581 Civil Engineering Materials - II (3, Occasionally)
Design, evaluation, and construction of materials including portland cement concrete and hot mix asphalt (HMA). Advanced topics related to high performance concrete and asphalt materials are covered in this course. Prerequisite: CE 381.

CE 582 Advanced Structural Mechanics (3, Sp)
Approximate methods of frame analysis; energy principles; flexibility and stiffness methods for trusses, frames, arches, non-prismatic members and flexible connections/supports; influence lines for statically indeterminate structures; introduction to plastic analysis; and use of available computer programs for structural analysis and matrix operations. Prereq: CE 382 and engineering standing.
CE 584 Design of Timber and Masonry Structures (3, F)
Current and historic design methods of buildings and their components using wood, wood products, bricks, and concrete blocks. Prereq: Courses in steel and reinforced concrete design at the senior level, or consent of instructor. (Same as ARC 584.)

CE 586 Prestressed Concrete (3, Sp)
Fundamental basis and underlying principles for the analysis and design of prestressed concrete. Working stress and ultimate strength design methods, full and partial prestressing. Design for shear and torsion, deflection, crack control, and long-term effects, and prestress losses. Composite beams, continuous beams, slabs, short and slender columns, precast structures and their connections. Prereq: CE 486G and engineering standing.

CE 589 Design of Structural Systems (3, Sp)
Design Loads and structural systems. Systems concepts in planning analysis, design and construction of structures. Buildings, bridges, special structures and foundations. Computer aided design and drafting (CADD) utilizing microcomputers and the mainframe computer. Written and oral presentations of student projects will be required. Lecture, three hours; laboratory, three hours per week. Prereq: CE 486G, CE 487G and engineering standing or consent of instructor; Coreq: CE 579.

CE 599 Topics in Civil Engineering (Subtitle required) (1-6)
A detailed investigation of a topic of current significance in civil engineering such as: design of small earth dams, man and the environment, drilling and blasting, scheduling construction operations, construction equipment and methods, traffic safety, optimum structural design, environmental impact analysis, systems analysis in civil engineering, motor vehicle noise and its control. May be repeated to a maximum of eight credits, but only four credits can be earned under the same title. A particular topic may be offered at most twice under the CE 599 number. Prereq: Variable; given when topic is identified; plus engineering standing.

Prerequisite for Graduate Work: Students desiring to take any of the following courses should have a thorough working knowledge of chemistry, physics, and mathematics. Alternatively, a candidate must hold a bachelor's degree in civil engineering or its equivalent.

CE 605 New Engineering Enterprises (3, Sp)
The course covers the theory and actual practices of organization, management and operation of engineering companies. Primary emphasis on construction companies; however, the principles apply to most service oriented engineering companies. Students will be required to do several independent exercises related to establishing an engineering company. Prereq: CE 505, graduate standing in engineering, or consent of instructor.

CE 631 Urban Transportation Planning (3, F)
A detailed review of the transportation planning process; inventory methodologies; trip generation, distribution and assignment with associated mathematical models and theories; prediction of future travel; land use models; modal split; developing and testing proposed systems; simulation. Prereq: CE 531 or equivalent and STA 381, or 681 or equivalent statistics course.

CE 633 Air Transport Engineering (3, F)
Planning location and design of airports, STOL ports, and heliports. Air traffic operations, performance and control as related to facility requirements. Role of governmental agencies. Prereq: CE 531 or consent of instructor.

CE 634 Traffic Characteristics (3, Sp)
Vehicle operating characteristics; driver, pedestrian and roadway characteristics as they individually, and collectively as traffic stream characteristics, are related to the planning design and operation of highway facilities. Prereq: CE 331.
CE 635 Highway Safety (3)
A detailed review of the impacts of safety considerations on highway design and planning, focusing on the highway environment, its users (both vehicles and drivers) and their interactions. The role of special interest groups (truckers,  
industry, insurance agencies) is also examined. Prereq: CE 539 or consent of instructor.

CE 642 Open Channel Flow (3, F)
The hydraulics of free surface flow including such topics as uniform flow, varied flow, unsteady flow, the hydraulic jump flow transitions, spillways and channel delivery. Prereq: CE 341.

CE 643 MECHANICS OF SEDIMENT TRANSPORT. (3, F)
Fundamentals of turbulence in rivers and sediment transport will be taught including recent theory, derivation of governing equations, experimental methods, modeling, and design based on sediment thresholds. Prereq: CE 341 or consent of instructor. (Same as BAE 643.)

CE 651 Fundamentals of Water Quality Control I (3, Occasionally)
Theory and practices of water and wastewater treatment with emphasis on physical and chemical processes for municipal and industrial wastewater treatment. Prereq: CE 451 or consent of instructor.

CE 652 Fundamentals of Water Quality Control II (3, Sp)
Theory and practices of wastewater treatment with emphasis on biological treatment processes for municipal and industrial wastewater treatment. Prereq: CE 451 or consent of instructor.

CE 653 Water Quality in Surface Waters (3, F)
Water quality requirements for various beneficial uses. Analysis of dispersion, advection, evaporation, natural 
eration, biological oxidation and photosynthesis, their effects on the physical, chemical and biological quality of waters in streams, lakes, reservoirs, estuaries and other surface waters. Eutrophication. Prereq: MA 214 and CE 451, or consent of instructor.

CE 655 Water Sanitation and Health (3, Sp)
Prevention of water-related diseases by appropriate supply and sanitation practices with designs applicable to small systems and rural areas of developing nations. Prereq: Previous college-level courses in chemistry and/or biology, CE 451, or consent of instructor.

CE 662 Stochastic Hydrology (3, Sp)
Hydrologic random variables and probability distributions. Statistical measures, development and use of Monte Carlo simulations in the generation of precipitation fields. Statistical tests of hydrologic data. Point frequency and 
regional frequency analysis. Analysis of hydrologic time series. Long-term trend, harmonic analysis of periodicity,  

CE 665 Water Resources Systems (3, Sp Odd Year)
Application of systems analysis, mathematical modeling, and optimization in water resources management and 
development and design by use of linear, non-linear, and dynamic programming models. Prereq. or concur: CE 421 and CE 569 or consent of instructor.

CE 667 Stormwater Modeling (3, Occasionally)
Introduction to deterministic and parametric modeling approaches for mathematically simulating storm water runoff and quality. Emphasis on modeling concepts and model formulation. Analysis of deterministic component models  
and their linkage. Formulation of existing parametric models. Presentation of methods for parameter optimization and regionalization. Demonstration of linkage between the two approaches with illustrative examples. Prereq: CE 341 and CE 461G, or consent of instructor.
CE 671 Advanced Soil Mechanics (3, F)
Detailed study of soil behavior. Specific topics include soil classification and structure, strength and deformational behavior, compaction, consolidation, and stress distribution in earth masses. Prereq: CE 471G or consent of instructor.

CE 672 Landfill Design (3, F)
This course deals with the geotechnical aspects of landfills for the disposal of municipal solid waste. Since landfill design is driven by state and federal regulations, time is taken to review these regulations. Landfills are evaluated as engineered systems consisting of multiple components. Each component is investigated individually, and methods are developed to predict and quantify the performance of these components so that appropriate materials, design criteria, and construction methods can be selected to assure that the landfill will function with minimal environmental impact. Prereq: CE 471G. (Same as BAE 672.)

CE 676 Groundwater and Seepage (3, Occasionally)

CE 679 Geotechnical Earthquake Engineering (3, Sp)
Dynamic and earthquake response of soils and structures using standard analysis and design techniques. Time discretization topics include fast Fourier transforms, central differences, Newmark's method and Rayleigh-Ritz modal decomposition. Elastic wave propagation and measurement methods for obtaining the dynamic properties of soils and structures are considered. Earthquake terminology, analysis and design methods. Prereq: CE 579 and CE 582.

CE 681 Advanced Civil Engineering Materials (3, F)

CE 682 Advanced Structural Analysis (3, F)
Theory and application of energy principles for plane and space frames. Prereq: CE 582 or consent of instructor.

CE 684 Slab and Folded Plate Structures (3, Sp)
Design and analysis of reinforced concrete floor slabs and folded plate roofs. Elastic and inelastic methods. Prereq: CE 582, EM 531, or consent of instructor.

CE 686 Advanced Reinforced Concrete Theory (3, F)
Background and origin of modern reinforced concrete design procedures and codes. Comparison of American and foreign methods of analysis. Review of current research and projection to anticipated future changes in design and construction practices. Prereq: CE 486G, EM 531 or consent of instructor.

CE 687 Advanced Metal Structures (3, Sp)
Background and origin of modern structural steel design procedures and codes. Applications of various methods to structural buckling problems. Instability of beams, columns, frames, and plates. Considerations of buckling and interaction of buckling modes in design. Post-buckling analysis and design of cold-formed steel, and other metal structures. Plastic analysis and design of steel frames. Factors related to metal structural design. Prereq: CE 582, EM 531, or consent of instructor.

CE 699 Topics in Civil Engineering (Subtitle required) (1-6)
An advanced level presentation of a topic from one of the major areas of civil engineering such as hydraulics, geotechnics, structures, transportation, surveying, or water resources. May be repeated to a maximum of twelve (12)
credits, but not more than four credits may be earned under the same subtitle. Course with a given subtitle may be offered not more than twice under this number. Prereq: Variable; given when topic identified; graduate standing.

CE 748 Master's Thesis Research (0)
Half-time to full-time work on thesis. May be repeated to a maximum of six semesters. Prereq: All course work toward the degree must be completed.

CE 749 Dissertation Research (0)
Half-time to full-time work on Dissertation. May be repeated to a maximum of six semesters. Prereq: Registration for two full-time semesters of CE 769 residence credit following the successful completion of the Qualifying exams.

CE 768 Residence Credit for Master's Degree (1-6)
May be repeated to a maximum of 12 hours.

CE 767 Dissertation Residency Credit for Doctoral Degree (2)
CE 769 Residence Credit for Doctoral Degree (0-12)
CE 779 Advanced Geotechnical Engineering (3, Sp)
Application of the principles of soil mechanics to the design and analysis of foundations and earth structures. Prereq: CE 579 and CE 671 or consent of instructor.

CE 782 Dynamics of Structures (3, F Odd Year)

CE 784 Shell Structures (3, Fall Even Year)
Design and analysis of reinforced concrete shell structures, including domes, barrel shells, hyperbolic paraboloids and cylindrical tanks. Prereq: CE 684 or consent of instructor.

CE 790 Special Research Problems in Civil Engineering (1-6)
Individual work on some selected problems in one of the various fields of civil engineering. Laboratory, six hours. May be repeated to a maximum of nine credits. Prereq: Consent of the chairperson of the department.

CE 791 Special Design Problems in Civil Engineering (1-6)
Individual work on some selected problems in one of the various fields of civil engineering. Laboratory, six hours. May be repeated to a maximum of nine credits. Prereq: Consent of the chairperson of the department.
c. Faculty Members and their Specialties

James Black, Part-time Instructor, Surveying
George E. Blandford, Professor and Chair; Structural Engineering
Gail M. Brion, Raymond-Blythe Professor; Environmental Engineering
Sebastian Bryson, Assistant Professor, Geotechnical Engineering
Mel Chen, Associate Professor, Intelligent Transportation Systems, Transportation Network Modeling
Richard Cheeks, Part-Time Instructor; Engineering Ethics
Brad Davis, Assistant Professor, Structural Engineering, Steel Structures
James Fox, Associate Professor; Water Resources Engineering
Hans Gesund, Professor; Structural Engineering
Issam E. Harik, Raymond-Blythe Professor; Structural Engineering
Michael Kalinski, Professor; Geotechnical Engineering, Soil Dynamics
William F. Maloney, Raymond-Shaver Chair Professor of Construction Engineering and Management
Kamyar C. Mahboub, Lawson Professor and Director of Graduate Studies; Const. Materials, Pavements
Lindell E. Ormsbee, Raymond-Blythe Professor; Hydrology and Water Resources Engineering
Jerry G. Rose, Professor; Materials Engineering, and Transportation Engineering
Nick Stamatiadis, Raymond-Blythe Professor; Traffic Safety, Human Factors, Transportation Engineering
Reginald Souleyrette, Commonwealth Chair Professor in Transportation Engineering
Tim Taylor, Assistant Professor, Construction Engineering and Management
Yi-Tin Wang, Professor; Environmental Engineering
Scott A. Yost, Associate Professor and Director of Undergraduate Studies; Hydraulic Engineering

d. Core Courses

For each Specialty area in Civil Engineering, there are certain civil engineering core courses, which are required for students who are interested in that area. These courses are listed as follows:

Civil Engineering Materials
CE 534 Pavement Design, Construction and Management
CE 581 Civil Engineering Materials - II
CE 681 Advanced Civil Engineering Materials

Construction Engineering and Management
CE 507 Construction Safety and Health
CE 508 Design and Optimisation of Construction Operations
CE 509 Control of Construction Project
CE 605 New Engineering Enterprises

Environmental Engineering
CE 551 Water and Wastewater Treatment Engineering
CE 555 Microbial Aspects of Environmental Engineering
CE 652 Fundamentals of Water Quality Control
CE 653 Water Quality in Surface Waters
CE 655  Water Sanitation and Health

Geotechnical Engineering
CE 579  Geotechnical Engineering
CE 671  Advanced Soil Mechanics
CE 672  Landfill Design
CE 779  Advanced Geotechnical Engineering

Hydraulic Engineering
CE 541  Intermediate Fluid Mechanics
CE 546  Fluvial Hydraulics
CE 547  Watershed Sedimentation
CE 549  Engineering Hydraulics
CE 642  Open Channel Flow
CE 662  Stochastic Hydrology

Structural Engineering
CE 582  Advanced Structural Mechanics
CE 584  Design of Timber and Masonry
CE 589  Design of Structural Systems
CE 682  Advanced Structural Analysis
CE 686  Advanced Reinforced Concrete Theory
CE 687  Advanced Metal Structures

Transportation Engineering
CE 525  Civil Engineering Applications of GIS
CE 531  Transportation Systems Operations
CE 533  Railroad Facilities Design and Analysis
CE 534  Pavement Design, Construction and Management
CE 539  Transportation Systems Design
CE 634  Traffic Characteristics
CE 635  Highway Safety

Water Resources
CE 542  Intro to Stream Restoration
CE 568  GIS for Water Resources

8. Course Scheduling
Most of the graduate courses in Civil Engineering are not offered every semester. Some are offered once a year and others once every two years. A student that does not take a course when it is offered may not have the opportunity to take that course later. This dilemma can be overcome by carefully planning the program well in advance. Listed below are the CE graduate courses, grouped according to the semesters in which they are offered.
a. **Courses Offered Every Semester**
   - CE 599  Topics In Civil Engineering (subtitle is required)
   - CE 699  Topics in Civil Engineering: (subtitle is required)
   - CE 748  Master's Thesis Research
   - CE 749  Dissertation Research
   - CE 768  Residence Credit For Master's Degree
   - CE 769  Residence Credit For Doctor's Degree
   - CE 790  Special Research Problems In Civil Engineering
   - CE 791  Special Design Problems In Civil Engineering

b. **Courses Offered Every Fall Semester**
   - CE 507  Construction Safety and Health
   - CE 508  Design and Optimization of Construction Operations
   - CE 534  Pavement Design, Construction and Management
   - CE 531  Transportation Systems Operations
   - CE 546  Fluvial Hydraulics
   - CE 584  Design of Timber and Masonry
   - CE 643  Mechanics of Sediment Transport
   - CE 653  Water Quality in Surface Waters
   - CE 671  Advanced Soil Mechanics
   - CE 681  Advanced Civil Engineering Materials
   - CE 682  Advanced Structural Analysis
   - CE 686  Advanced Reinforced Concrete Theory

c. **Courses Offered in Fall Semester Occasionally**
   - CE 634  Traffic Characteristics
   - CE 782  Dynamics of Structures
   - CE 784  Shell Structures

d. **Courses Offered Every Spring Semester**
   - CE 509  Control of Construction Project
   - CE 517  Boundary Location Principles
   - CE 525  Civil Engineering Applications of GIS
   - CE 533  Railroad Facilities Design and Analysis
   - CE 539  Transportation Systems Design
   - CE 547  Watershed Sedimentation
   - CE 549  Engineering Hydraulics
   - CE 551  Water and Wastewater Treatment Engineering
   - CE 579  Geotechnical Engineering
CE 581  Civil Engineering Materials - II
CE 582  Advanced Structural Mechanics
CE 586  Prestress Concrete
CE 589  Design of Structural Systems
CE 605  New Engineering Enterprises
CE 652  Fundamentals of Water Quality Control
CE 679  Geotechnical Earthquake Engineering
CE 687  Advanced Metal Structures
CE 779  Advanced Geotechnical Engineering

e. Courses Offered in Spring Semester Occasionally
   CE 642  Open Channel Flow
   CE 684  Slab and Folded Plate Structures

f. Courses Offered Periodically
   CE 631  Urban Transportation Planning
   CE 633  Air Transport Engineering
   CE 635  Highway Safety
   CE 634  Traffic Characteristics
   CE 662  Stochastic Hydrology

9. Graduate Student Fellowships

Civil Engineering graduate students may qualify for several types of fellowships as described below. All fellowship holders must register as full time graduate students. All fellowships normally carry with them partial or full tuition support.

a. CSX, Durr, Garver, Nichols, Raymond-Terrell, Vaughn-Melton, Walker, Harp Fellowships

   These fellowships are highly competitive and they are designed to support CE Graduate Students, especially outstanding Ph.D.-level CE students. If there are funds available, highly qualified MS candidates may be considered. These Fellowships may be renewed on an annual basis. Several candidates are selected every semester, and applications are reviewed throughout the year. To be considered for one of these CE Graduate Fellowships, the student must be nominated by his/her faculty advisor. For further information about UK Civil Engineering applicants may access http://www.engr.uky.edu/ce/. The application may be found at the end of this Handbook.

b. Presidential Fellowships

   The Graduate School awards approximately 10 Presidential Fellowships each year. These carry a stipend of $10,000 per academic year plus tuition. They are awarded in an open competition on the basis of grade point averages and GRE scores. The minimum criteria for eligibility are: 90 percentile or above on two of the three portions of the GRE (verbal, quantitative and analytical) or an average percentile of 90% or above on two of the three portions of the Examination, an undergraduate GPA of 3.5, and a graduate GPA of 3.7 on all previous graduate work. All applications must be sent directly to the UK Graduate School: http://www.rgs.uky.edu/gradhome.html.

c. Open Competition Academic Year Fellowships
The Graduate School in an open competition awards approximately 10 fellowships worth $9,000 each per academic year plus tuition. The minimum criteria for eligibility are: 81 percentile or above on two of the three portions of the GRE (verbal, quantitative and analytical) or an average of 81 percentile on two of the three portions, an undergraduate GPA of 3.2, and a graduate GPA of 3.5 on all previous graduate work. All applications must be sent directly to the UK Graduate School: http://www.rgs.uky.edu/gs/gradhome.html.

d. Lyman T. Johnson Graduate Fellowships
   Several fellowships are awarded by the UK Graduate School to students from under-represented minority backgrounds. Generally the awards are for $4,500-$10,000 per year plus tuition, and U.S. citizenship is a requirement. All applications must be sent directly to the UK Graduate School:

e. The Otis A. Singletary Fellowship, and W. L. Matthews, Jr. Fellowship for Graduate or Professional Study.
   The quasi-endowment funds established by the Board of Directors of the University of Kentucky Athletics Association will provide annually for three $10,000 Fellowships to be awarded to UNIVERSITY OF KENTUCKY graduating seniors who plan to continue their post-baccalaureate education in one of the University's graduate or professional programs. The fellowships are for the first year only and are not renewable for subsequent years. All applications must be sent directly to the UK Graduate School: http://www.rgs.uky.edu/gs/gradhome.html.

f. Dissertation Year Fellowships
   Approximately 10 Dissertation Year Fellowship Awards worth $10,000 per academic year and full payment of tuition. Applicants must have passed the Qualifying Examination. All applications must be sent directly to the UK Graduate School: http://www.rgs.uky.edu/gs/gradhome.html.

g. Other Fellowships
   The Graduate School makes other fellowships available from time to time. Application forms are available from the Graduate School or its web page. All applications must be sent directly to the UK Graduate School:

10. Special Fellowships and Graduate Assistantships
a. Advanced Institute for Transportation Systems Science Fellowship
   Depending on funding, several fellowships are selected by the Institute, which is part of the Transportation Systems Management program funded by the U.S. Department of Transportation through the University Transportation Centers program. Special graduate level courses are required by the Institute to be qualified for this award. Application forms can be obtained from Director, Kentucky Transportation Center, Oliver H. Raymond Building, University of Kentucky, Lexington, KY 40506-0281.

b. Environmental Systems Graduate Assistantship
   Graduate Assistantships are available at the Kentucky Water Resources Research Institute through an Interdisciplinary Program in Environmental Systems. The students are encouraged to contact the Kentucky Water Resources Research Institute.

SECTION II. MASTERS PROGRAM

1. Program Options
   The Masters of Science in Civil Engineering (MSCE) program offers students a wide variety of program options for advanced study. It can accommodate students continuing directly from an undergraduate degree program, as well as experienced practitioners. Students can choose to follow broadly diversified programs encompassing several areas of Civil Engineering, or they can focus on one area and pursue it in considerable depth. MSCE study programs can be set up to permit emphasis on practical design and construction applications, or to follow theoretical or experimental
research topics to the frontiers of present knowledge. The MSCE degree can be considered terminal, or it can lead to further study for the Ph.D. degree at the University of Kentucky or elsewhere. The requirements for various options within the MSCE program are as follows:


For the Master of Science in Civil Engineering (MSCE) degree Plan A, 24 credit hours of course work and a thesis are required to fulfill degree requirements. While working on their thesis, a student must register for a total of 6 credit hours of CE 768. Independent work, taken as CE 790, or CE 791, may not be used for part of the thesis. A member of the Graduate Faculty must actively supervise the thesis. All graduate students are strongly encouraged to consult with their academic advisors regarding their degree plan options during their first semester at UK.

b. MSCE Program Plan B (30 Hour Non-Thesis Option) - Course oriented.

For the Master of Science in Civil Engineering (MSCE) degree Plan B, a minimum of 30 credit hours of graduate work are required, including at least 3 credit hours of independent work. The requirement for independent work may be satisfied by either taking an approved curriculum of courses which contain integral independent study components totaling a minimum of 3 credit hours, or by completing at least three credit hours of CE 790 and/or CE 791.

Students who wish to complete the independent work requirement by choosing from an approved curriculum of courses containing integrated independent study components, shall present a plan of study which satisfies this requirement, and all other Graduate School requirements, to the Director of Graduate Studies for approval before the completion of 12 credit hours of graduate course work. Preferably this should occur no later than the end of the first semester of graduate residence.

The requirement for all independent work must be satisfied under the direction of one faculty member (for students choosing a CE 790 and/or CE 791), or several faculty members (for students following an approved curriculum of courses). The student’s advisor(s) shall assign, monitor, and evaluate the student’s work as part of the specific course. Written reports would usually represent the work product to be evaluated.

All students must pass a Final Examination as specified by the rules of the Graduate School. The contents and style of the examination, and the evaluation of the student’s performance, are the responsibility of a Graduate Faculty committee appointed by the Dean of the Graduate School. There is no foreign language requirement for the MSCE degree in Civil Engineering.

List of Graduate-Level Courses with Independent Work Component

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c. University Scholars Combined BS-MS Program

MSCE Thesis Option A:
All students choosing the thesis option complete a minimum of 24 credit hours (plus 6 hours of CE 768). At least 12 credit hours must be at the 600 or 700 levels.

MSCE Non-thesis Option B:
Option B1: Students choosing this non-thesis option will have to complete a minimum of 30 credit hours of graduate course work, including three hours of CE 790 or CE 791. At least 15 credit hours must be at the 600 or 700 levels.

Option B2: Students choosing this non-thesis option will have to complete a minimum of 30 credit hours of graduate course work. These courses must have at least three hours of embedded independent study hours. The list of such courses is provided in the UK-CE Graduate Handbook, which may be found on-line. At least 15 credit hours must be at the 600 or 700 levels.

2. Residence Requirements

a. On-Campus Residence

A minimum of 21 semester hours must be earned while in residence on the Lexington campus of the University of Kentucky.

b. Transfer of Credits

With the approval of the faculty advisor, the Director of Graduate Studies, and the Dean of the Graduate School, a student may transfer up to nine (9) semester hours of graduate credits, provided that the grades earned were A or B. Such credits may be earned (1) as a student in another graduate program at the University of Kentucky, (2) as a post-baccalaureate graduate student at the University of Kentucky, or (3) as a graduate student at another accredited graduate school. In the event a student offers credits in more than one of these categories, the total to be credited toward the degree still may not exceed nine (9) hours. In no case will independent work, research, Thesis or Dissertation credit hours completed as a part of degree requirements for one program be considered to satisfy requirements of a subsequent master's program.

c. Correspondence Work

No graduate credit is given for courses taken by correspondence.

3. Course Requirements

a. Program Approval

The faculty advisor and the Director of Graduate Studies must approve each student’s course program.

b. Deficiencies

A student may not be able to immediately begin a full graduate program leading to the MSCE degree; it may be necessary for the student to satisfy prerequisites omitted in his or her undergraduate curriculum. The faculty advisor and the Director of Graduate Studies determine deficiencies. Such remedial work will not earn credit toward fulfilling degree requirements.
c. Requirements by Course Numbering

No 800- or 900-level courses, or the courses offered by the Civil Engineering Department which are numbered below 500, may be credited toward the MSCE degree.

Candidates for the MSCE degree may credit the following toward degree requirements:

1. Any 500-, 600-, or 700-level course; and
2. Any 400G-level course offered by a department other than Civil Engineering.
3. 800- or 900-level course approved by the Graduate School with special request.

In addition, at least 2/3 of the minimum requirements for the master's degree must be in regular courses, and at least half of the minimum course requirements (excluding thesis, practicum, or internship credit) must be in courses numbered on the 600-level or 700-level.

d. Requirements for CE/EGR Area

At least two-thirds of the minimum coursework requirements for the MSCE degree must be completed in CE or EGR prefix courses. At least one-half of the minimum course work requirements for the MSCE degree must be completed in CE or EGR prefix courses. The Director or Graduate Studies and the Dean of the Graduate School can waive this requirement upon recommendation of the faculty advisor.

e. Grades

The MSCE will be awarded only if the student has attained a grade point average (GPA) of at least 3.0 on all work taken as a graduate student and all work carrying graduate credit.

f. Transfer from Other Graduate Degree Programs

Students currently enrolled in other graduate degree programs at the University may transfer to the MSCE program with the approval of the Director of Graduate Studies. All requirements and procedures stipulated herein shall apply to such students. A maximum of nine (9) credit hours may be transferred provided that the grades earned are an A or B.

4. Thesis Requirements

Thesis MSCE graduate students who have completed all of their course work (including 6 hours of CE 768), and are working on their MSCE Thesis, must register for "0 credit hour" of CE 748 each semester for a maximum of six semesters. This would keep the student registered full-time for student loan deferment as well as student visa purposes.

The Thesis must be developed under the direction of a full member or associate member of the Graduate Faculty. Before beginning work, an "Independent Graduate Work Initiation Form" must be filled out and filed with the Director of Graduate Studies. The finished thesis must be approved by the Thesis director, the Director of Graduate Studies, the examining committee, and the Graduate School, and must be in conformity with instructions prepared by the Graduate School entitled, "Instruction for the Preparation of Thesis and Dissertations."

5. Independent Work Courses - CE 790 and CE 791

CE 790, "Special Research Problems in Civil Engineering", and CE 791, "Special Design Problems in Civil Engineering", may each be taken for up to 6 credit hours in a semester, and may be repeated to a total of 9 credit hours each. However, only three (3) hours of CE 790/791 may be counted toward a Plan-B MSCE degree. Prior to registering for such a course, the student must obtain the approval of the faculty advisor and of the Director of Graduate Studies. Prior to the beginning of the semester or the summer session in which the student has registered for the course, the student must also file an "Independent Graduate Work Initiation Form" with the Director of Graduate Studies.
6. Final Examination

The student is required to take a Final Oral Examination for the MSCE degree. This Examination is administered by an examining committee appointed by the Dean of the Graduate School upon recommendation of the Director of Graduate Studies. The examining committee consists of at least three faculty members. All committee members must be members of the UK graduate faculty, and at least one must be a full member of the graduate faculty. The Examination is comprehensive and covers the student's entire program including, but not limited to, the Thesis or independent work reports. The Final Examination must be scheduled with the Graduate School at least three weeks prior to the date of the Examination. The Final Examination is given no earlier than the beginning of the semester in which the degree is to be awarded and no later than eight days before the last day of classes of that semester. The committee may pass or fail the student by a majority vote. In case of a tie vote, the student fails. In the event of failure, the committee may recommend to the Graduate School the conditions under which a second Examination may be administered. In so far as it is practicable, the same examining committee shall give the second exam. A third Examination is not permitted.

a. For the 24 Hour Plus Thesis MSCE Option (Plan-A), the following procedures apply:

1. Submit Thesis to the advisor and the Director of Graduate Studies in final draft form, and request that they certify it to the Graduate School as satisfying all Graduate School requirements except for pagination.
2. File a request for scheduling the MSCE Final Exam (online). The request must be made at least three weeks prior to the anticipated date of the Examination. Pay particular attention to the Graduate School deadlines.
3. Submit Thesis to the examining committee at least one week prior to the Final Examination.
4. Take the Final Examination.
5. Modify Thesis as required by the examining committee.
6. Submit Thesis in final form to the Graduate School by the required date prior to the end of the semester (see the Graduate School calendar).

b. For the 30 Hour, Non-Thesis MSCE Option (Plan-B), the following procedures apply:

1. File a request for scheduling the MSCE Final Exam (online). The request must be made at least three weeks prior to the anticipated date of the Examination. Pay particular attention to the Graduate School deadlines.
2. Submit report(s) resulting from individual work courses (e.g., CE 790 and/or CE 791) to the faculty advisor, the Director of Graduate Studies, and the examining committee at least one week prior to the date of the Final Examination. If the degree is a "Plan-B MSCE - course-only" option, the student must properly document the list of his/her classes with imbedded independent hours totaling a minimum of three hours.
3. Take the Final Examination.

7. Graduation Fees

There are no graduation fees. However if a thesis is being submitted, a thesis fee must be paid at the Billings and Collection Office about six weeks prior to graduation (see the Graduate School calendar).

8. Concurrent Degree Programs

Concurrent enrollment for degree purposes in more than one graduate program is permitted only with the approval of the student's graduate adviser(s), all program DGSs involved, and the Dean of the Graduate School. No more than nine (9) hours of coursework may be common to concurrent degree programs.
SECTION III: THE DOCTOR OF PHILOSOPHY (Ph.D.) PROGRAM

1. Course Requirements

There is no minimum number of credit hours for the Ph.D. The number of courses required varies, depending on the background of the student and the topic of the student’s research. Generally, at least one year of full-time course work (or equivalent) at University of Kentucky beyond a master’s degree will be required before the student is allowed to take the Qualifying Examination.

2. Major Professor

A Major Professor, heading an Advisory Committee, guides the student’s Ph.D. work. The purpose of this committee is to give continuity of direction and counsel, and provide intellectual stimulation, from the earliest days of residence through the completion of the doctorate.

The Director of Graduate Studies, or the DGS’s designee, may serve as a temporary advisor to a beginning graduate student. The Director of Graduate studies, or the DGS’s designee performs advisory functions until the Major Professor and the Advisory Committee are appointed, normally by the end of the first semester. The Major Professor then assumes primary advisory functions and chairs the Advisory Committee. The Major Professor serves as the Dissertation Director. The Advisory Committee provides advice to the student and sets specific course and research requirements (within the applicable rules), which the student must meet in pursuit of a doctorate degree. With the consent of the committee, the student must file (on-line) a request to the UK Grad School to form his/her committee. The Dean of the Graduate School, upon the advice of the Director of Graduate Studies, appoints the Major Professor and Advisory Committee.

3. Advisory Committee

The Advisory Committee has a core of four members. In the Civil Engineering Department this core normally consists of the Major Professor as Chair, two other members from the CE Department, and at least one representative from outside of CE Department. All members of the core must be members of the Graduate Faculty of the University of Kentucky and three (including the Major Professor) must possess full Graduate Faculty status. Additional faculty members may serve as members of the Advisory Committee. The core of the Advisory Committee must be kept at its full complement throughout the graduate career of the individual student. Thus, in the event of a vacancy on the Committee (occasioned by resignation, faculty leave, or inability to serve), an appropriate replacement must be made prior to the making of any Committee decision.

All decisions of the Advisory Committee are by majority vote of its Graduate Faculty members. Advisory Committee decisions must be reported promptly to the Director of Graduate Studies who will be responsible for transmitting them to the Dean of the Graduate School.

In addition to advising, and program course and research planning, the Advisory Committee administers the Qualifying Examination, supervises the preparation of the Dissertation, and serves as the Examining Committee that administers the Final Examination and approves the Dissertation.

4. Changes in Membership of Advisory Committee

While the composition of the Advisory Committee should be relatively stable over its lifetime, changes may occur.

a. Changes in Students Interest or Emphasis

Given the early date of selection of the advisory committee, students may wish to change the Major Professor or any other member of the Advisory Committee. Such action requires consultation between the student, the Major Professor, the affected faculty members, and the Director of Graduate Studies. If the advisory committee has been formally appointed, the approval of the Dean of the Graduate School is also necessary.

b. Faculty Resignations From Committee

Faculty members, who find that they are making little contribution, or who develop other priorities, may resign from the advisory committee. In such cases, the student, in consultation with the Major Professor and the
Director of Graduate Studies, may suggest a replacement. A new committee form must be filed (on-line) with the Graduate School by the student.

c. Faculty Turnover and Leave

In the event that a faculty member resigns from the University or goes on leave, the position on the advisory committee must be filled by an appropriate replacement. In such a case, a new committee form must be filed (on-line) with the Graduate School by the student. Should a faculty member's temporary leave fall between essential meetings of the advisory committee, replacement is not necessary. Also, special arrangements can be made for a committee member on-leave, particularly a Chair, to conduct some of the duties from remote; replacement is not necessary if such arrangements can be made.

5. Language Requirements

There is no required foreign language.

6. Qualifying Examination

The Graduate School requires that all Ph.D. students must take a Qualifying Examination in order to verify that they have sufficient understanding of, and competence in, their fields to become candidates for the degree. This Examination is prepared and administered by the student's Advisory Committee. This exam is taken after the Committee feels that the student has completed all necessary course work, and is ready to devote his/her full effort to the Dissertation. The Qualifying Examination must be scheduled through the Director of Graduate Studies and approved three weeks in advance by the Graduate School. Failure to meet this scheduling requirement may result in a student's not having proper University status and can cause omissions in records, loss of credits, or delay of graduation.

The Qualifying Examination consists of two components: written, and oral parts. The written part is usually scheduled first and administered by each member of the Advisory Committee individually. This is followed by an oral part in which all members participate at the same time.

The committee makes the pass or failure decision by a majority vote. A tie vote means failure. The Director of Graduate Studies to the Graduate School must report the results of the Examination within ten days of its conclusion. If the result is failure, the Committee determines the conditions to be met before another Examination may be given. The minimum time between Examinations is four months. A second Examination must be taken within one year after taking the first Qualifying Examination. A third Examination is not permitted.

7. Residence Requirement

a. Pre-Qualifying Examination

The purpose of a Pre-Qualifying Examination residency requirement is to encourage doctoral students to experience contact with the academic community: colleagues, libraries, laboratories, on-going programs of research and inquiry, and the intellectual environment that characterizes a university. Such experience is generally as important as formal class work in the process of intellectual development. While the residency requirement is, by necessity, given in terms of full or part-time enrollment, the intent of the requirement is to ensure that the student becomes fully involved in a scholarly campus life. Generally, a full-time course work for one academic year (18 hours), or equivalent, is the minimum post-masters course requirement for CE Ph.D. student prior to their Qualifying Exam.

b. Post-Qualifying Examination

1) Students first enrolled in a doctoral program in the fall of 2005 semester and beyond:

   After passing the qualifying exam, must enroll for 2 hours of CE 767 Dissertation Residency Credit:
   • Must remain continuously enrolled in CE 767 every Fall and Spring semester until the Dissertation is defended, and
• Must complete a minimum of two semesters of CE 767 before they can graduate.
• Students first enrolled before the beginning of the Fall 2005 semester who have not yet taken the Qualifying Exam may opt to follow either the old or new post-qualifying residency rules. Enrollment in 2 hours of CE 767:
  - charged at the in-state tuition rate (plus fees),
  - constitutes full-time enrollment, and
  - graded S or U.

The semester of the qualifying exam could count toward the post-qualifying residency requirement:
• if formal Request to Schedule the Qualifying Exam is submitted within first six weeks of the semester, and
• exam can be taken at any time during the semester.

2) Students who passed the Qualifying Exam prior to the end of summer session II, 2005, the Post-Qualifying residency requirement may be satisfied by:

• completion of two consecutive full-time semesters (9 credits each) of CE 769 with a grade of "S" or
• completion of three consecutive part-time semesters (6 credits each) of CE 769 with a grade of "S."

• after one year, students are required to remain continuously enrolled in CE 769 or CE 749 (0 credit hours)
  each semester until the dissertation is defended.

8. The Dissertation

Each student must present a Dissertation, which is the result of original research. The Major Professor is the primary source of guidance in the planning and preparation of the Dissertation. However, other members of the Advisory Committee should be involved in the process as well. All core members of the Advisory Committee must read the Dissertation prior to signing the Approval Form. It is the responsibility of the Advisory Committee to make suggestions for any revisions needed before the Final Examination. A majority of the Advisory Committee core members must indicate that the format and substance of the Dissertation are adequate to justify the scheduling of the Final Examination. The Final Examination on the Dissertation may not be scheduled without the signatures of a majority of the Advisory Committee's members on the Dissertation Approval Form.

The style and form of the Dissertation must be in conformance with the instructions prepared by the Graduate School. For specific instructions regarding the format of the Dissertation, the student should obtain a copy of the Instructions for the Preparation of Theses and Dissertations from the Graduate School office.

9. Graduation Fees

There are no graduation fees. Each graduating doctoral student will pay Dissertation fees. Payment will be made at the University Billings and Collections Office. Authorization forms to pay Dissertation fees are issued by the Graduate School.

10. Final Examination

a. Composition of Committee

The Final Examination includes a defense of the Dissertation and may be as comprehensive in the major and minor areas as the Advisory Committee chooses to make it. Prior to the Final Exam, the Committee is augmented with an outside examiner, who is appointed by the Dean of the Graduate School. The Dean of the Graduate School and the President of the University are ex-officio members of all Final Examination committees.

b. Scheduling of Examination

The Ph.D. Final Examination is a public event, and its scheduling is published and announced beforehand by UK. Any member of the UK community may attend.

At least four weeks prior to the Final Examination, and following the action by the Major Professor that the final Dissertation has been distributed to members of the Advisory Committee, the student files (on-line) his/her intent to schedule the Final Exam. Then, the Graduate Dean appoints an outside examiner as a core member of the Advisory Committee. The Graduate School will designate the specific time and date of the Final Examination at least two weeks prior to the actual Examination. All members of the Committee except the outside examiner will
have had an opportunity to suggest revisions to the Dissertation prior to signing the Dissertation Approval Form. Dissertation revisions must be completed as soon as possible.

The Dissertation Approval Form, along with a typewritten copy of the Dissertation, must be presented to the Graduate School before the Final Examination could be scheduled. The draft of the Dissertation submitted must be complete in content, including all footnotes, tables, figures, and appendices. A full bibliography or set of references must be included as must a title page and abstract. A similar copy must be presented to the outside examiner as soon as the person is appointed.

The Final Examination should be scheduled only during time periods consistent with academic semesters (including the summer term). The Examination must be completed and the results reported no later than eight days before the last day of classes of the semester in which the student intends to receive the degree.

c. Procedure

The Final Examination is usually primarily oral, and may last two to four hours, or more. In addition to defending the completed Dissertation, the student is expected to demonstrate an understanding of the discipline of which the Dissertation is a part, an understanding of the context of the Dissertation, and general and specific knowledge of the field of Civil Engineering, its sub-areas, its history, its scientific and mathematical foundations, and its role in society.

Members of the Committee will report the outcome of the Final Examination to the Graduate School immediately upon its completion. In all decisions the majority opinion of the Graduate Faculty members of the Examining Committee prevails. If the Examining Committee is evenly divided, the candidate fails.

In the event of failure, the Examining Committee recommends to the Dean of the Graduate School conditions under which the candidate may be re-examined; that is if a re-examination is deemed appropriate. When conditions set by the Dean have been met, the candidate may be re-examined. Should any vacancies on the committee occur between the two examinations, the Dean of the Graduate School will appoint replacement members. A third Examination is not permitted.

11. Submission of Dissertation

After the Final Examination is passed, the final copy of the Dissertation is prepared. Final copies are then submitted to the Graduate School along with the signatures of the Advisor and the Director of Graduate Studies. The Dissertation in its final form must be received in the Graduate School within sixty (60) days of the Final Examination. If this deadline is not met, the candidate must undergo a second Final Examination. If the student plans to graduate in the semester in which the Final Examination is taken, the Dissertation must be presented and accepted by the Graduate School by the last day of that semester.

SECTION IV: GUIDELINES FOR ASSISTANTSHIPS

1. Terminology

Graduate students receiving remuneration through the Department for services rendered, are formally classified either as Teaching Assistants or Research Assistants, depending on the source of the funds and duties and responsibilities.

2. Responsibilities

The Director of Graduate Studies makes personnel decisions regarding Teaching Assistants. The principal investigator of the research project makes those decisions regarding Research Assistants. The Chair of the Department must approve all such personnel decisions before they can take effect. Only the Chair of the Department may waive the provisions of these guidelines in individual circumstances.
3. Period of Appointment

a. Assistantships (TA, RA)

(1) When financial projections permit, the appointment period for Assistants may encompass a 9-month interval beginning August 15 and ending May 15 of the following year.

(2) Alternatively, appointments may be made for 4.5 months beginning August 15 and ending December 31 for the fall semester, or beginning January 1 and ending May 15 for the spring semester.

(3) In no event will the appointment period exceed nine months. Summer appointments may be made on a case-by-case basis. Such appointments must be coordinated with the DGS in advance of summer sessions.

(4) All TA and RA positions are subject to a screening process, which includes an orientation. Failure to successfully complete this process, particularly the TA screening, could result in termination of support. All TA and RA must make themselves available for attending various orientation/training sessions which are conducted by the Graduate School and the CE Department during the 2-week period before the beginning of the classes. Failure to attend these sessions may result in termination of the financial support. All support can be terminated due to poor performance. Depending on tax laws, some or all of the financial support may be taxable.

b. Absences

With the exception of legal holidays, graduate and research assistants are expected to provide service throughout the periods of their appointments. Absences during these periods require notification of and approval by the faculty supervisor and the Director of Graduate Studies.

4. Service Load

Under TA, RA rules, a full-time appointment is 20 hours/week, and a part-time appointment is 10 hours/week. Students who are hired as a Teaching Assistant or Research Assistant, are barred from engaging in any other type of employment on or off campus. Failure to comply with this rule will result in the termination of their UK financial support.

a. Teaching Assistants (TA), Research Assistants (RA)

(1) During the 9-month academic year, appointments are limited to a maximum of 20 hours per week.

(2) Appointments requiring 40 hours per week of work may be made during all or part of the three summer months on a case by case basis.

(3) During the 9-month academic year, Teaching Assistants must be registered as full-time students. However, if the student has completed all of the course requirements for the degree, the student must enroll in the Zero Credit hours through the DGS (CE 748 for MSCE, and CE 749 for Ph.D., at no cost) for student loan deferment and student visa purposes.

b. Service Load for TA/RA

The service load of all assistants must be in accord with Graduate School limitations based on the amount of course work being simultaneously undertaken and interpreted as follows.

### Maximum Work Load (Hours per Week) for Reimbursed Services of All Types

<table>
<thead>
<tr>
<th>Course Load* Semester Hours</th>
<th>4-week Intercession Work Load</th>
<th>8-week Summer Session Work Load</th>
<th>Regular Session Work Load</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>Not Permitted</td>
<td>Not Permitted</td>
<td>0</td>
</tr>
<tr>
<td>14</td>
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<td>0</td>
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<tr>
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</tr>
<tr>
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<td>0</td>
<td>0</td>
<td>10</td>
</tr>
</tbody>
</table>
5. Selection and Appointment of TA, RA

a. Application for Assistantships

Any graduate student may apply for an assistantship (TA, RA) by contacting the Director of Graduate Studies. The CE application for financial support is found at the end of this Handbook.

b. Appointment Criteria

All TA and RA positions are very competitive, and students are selected based upon their qualifications and a matching interest in our CE Department. Additionally, the following special criteria may be applied in ranking the students.

(1) Students who have been employed on sponsored research projects that terminated before they could reasonably have been expected to complete the work for their degrees will be given first priority.

(2) Students who have been selected by faculty members for work on sponsored projects for which funding has not yet been received, though it may reasonably be expected to begin during the academic year.

(3) Graduate students already in the UK CE Department and identified as planning to obtain Ph.D. degrees there, in order of apparent academic merit and promise.

(4) External applicants for our Ph.D. program, in order of apparent academic merit and promise, but with exceptions, which may be necessary to keep a balance amongst the departmental programs.

(5) All others, in order of apparent academic merit and promise.

The Director of Graduate Studies along with the Chair's advisory committee will apply these criteria, and will make the necessary judgments. Final approval of all appointments rests with the Department Chair.

6. Renewal and Termination of Appointments

a. Renewal of Appointment for Graduate and Research Assistants

(1) Assistantships will not be renewed if academic progress is unsatisfactory.

(2) Appointments cannot be renewed beyond the end of the academic term in which all degree requirements have been satisfied.

(3) Appointments cannot be renewed if funding is unavailable.
(4) Appointments will not be renewed beyond the maximum periods stated in Section IV-6b below.

b. Maximum Periods of Appointment

(1) Graduate Assistants working toward Ph.D. degrees: 8 semesters, including any time spent as an Assistant before entering the Ph.D. program.

(2) Graduate Assistants working toward the MSCE degree: 3 semesters.

(3) Research Assistants on extramural supported projects working toward Ph.D. degrees: 5 years, including any time spent as an Assistant before entering the Ph.D. program.

(4) Research Assistants on extramural supported projects working toward the MSCE degree: 2 years.

These limits are imposed to conserve scarce financial resources, and to ensure that students will endeavor to make reasonable progress toward their degrees. They may be waived upon request of the student’s Advisor, and with the approval of the Director of Graduate Studies and the Department Chair.

c. Renewal of Assistantships

Assistantships will not be automatically renewed beyond the period of appointment. On an annual basis, applications for renewal must be filed before the last day of advance registration for the semester in which a renewal is desired. The criteria and priorities for renewal will be the same as for new appointments. See Section IV-6 above. Efforts will be made to continue support of students whose service and academic records have been satisfactory. HOWEVER, RENEWAL OF AN ASSISTANTSHIP CANNOT BE GUARANTEED BEYOND THE INITIAL PERIOD FOR WHICH IT WAS GRANTED.

7. Multiple Sources of Financial Aid/Employment

A student may simultaneously receive financial aid from multiple sources with the following exceptions:

(1) Students on trainee-ship or other externally funded programs where funds are available to pay tuition are not eligible for tuition scholarships.

(2) Students may not receive funds granted for the express purpose of paying tuition, fees, books, supplies, etc. from more than one source.

(3) Students may not receive support from multiple sources if one of those sources restricts or prevents receipt of support from other sources.

(4) Students will not be permitted to engage in overload employment that unduly restricts or prevents satisfactory academic development or service to the University. An assistantship will generally not be awarded to an individual who has adequate support from other sources unless there are no other qualified applicants for a critical position, and/or the individual has particularly unique qualifications.

8. Parking Privileges

Graduate students are automatically eligible for "C" parking permits. Application for "E" permits by Teaching Assistants, Research Assistants, and Graduate Assistants are accepted only upon additional certification by the Chair of the department.

9. Holidays, Vacations, and Sick Leave

Graduate and research assistants are not required to work during legal holidays. However, since they are classified as temporary employees of the University, they are not eligible to receive vacations and sick leave with pay.
SECTION V: HELPFUL TIPS

1. Admission Process
   The University of Kentucky graduate admission process is managed on-line. All applicants must submit all of
   their applications material (applications, transcripts, test scores, etc.) in their original form to the UK Graduate
   School. Sending original application material to the Civil Engineering Department would only delay the
   application process. However, the applicants are welcome to send an extra copy of their application material to
   the Civil Engineering Department for their file. Applicants who are not a graduate of the University of
   Kentucky are required to submit three letters of recommendation from their former professors and/or
   employers. The format of these letters should follow a regular business letter format.

2. Post-Admission
   After successful admission, the students are responsible for becoming fully familiar with the UK rules and
   regulations, deadlines, etc. The students must check with the UK Graduate School and UK CE Department
   regarding attending mandatory orientation sessions. The students must consult the UK course catalog and
   prepare for on-line registration. The Civil Engineering Department Director of Graduate Studies will be
   available for consultation during the registration period. However, the students are strongly encouraged to
   consult with the faculty in their area of interest about their various course options.

3. Financial Support
   The application for financial support through the CE Department is provided at the end of this Handbook.
   Additionally, the UK Graduate School advertises financial support opportunities through its web site, and
   students are encouraged to apply. It is important to note that financial support packages do not automatically
   renew, and students are responsible to apply for renewal prior to deadlines. Finally, all financial supports are
   contingent upon satisfactory performance and availability of funds.

4. Academic Advisory Committee
   The student is responsible to select an academic advisor in his/her area during his/her first semester at UK.
   Often this advisor is the research director who supports the student on a research project. Prior to the end of the
   second semester, and in full consultation with his/her academic advisor, the student must form an Academic
   Advisory Committee, and report this to the DGS. The students are encouraged to meet with their committee on
   a regular basis and update the committee about their progress.

5. Academic Plan
   In full consultation with the Academic Advisory Committee, the student must develop a course plan and a
   research plan, and discuss a realistic graduation target date.

6. Qualifying Exam (Ph.D. Students Only)
   Once a Ph.D. student nears the completion of his/her course work (roughly the beginning of the second year at
   UK), the student must schedule a Qualifying Exam in full consultation with the Advisory Committee. Upon
   successful completion of the Qualifying Exam, the student submits a research proposal to the Advisory
   Committee. At this point, the Advisory Committee may require the student to take more courses, or go forward
   with research without taking further courses.

7. Schedule Final Exam
   All graduate students must file for a degree, and schedule a Final Exam early in their last semester at UK. All
   necessary forms and deadlines can be found on the Graduate School’s web site.
APPENDIX - A
CE Graduate Programs:
Learning Outcomes (MSCE and Ph.D.)

UK Department of Civil Engineering
MSCE Learning Outcomes

MSCE Program: Mission Statement

The mission of the University of Kentucky, Department of Civil Engineering Graduate Studies MSCE Program is to:

1) provide opportunities for education, research, and service in a scholarly environment to the Commonwealth, the United States, and the global community;
2) prepare our students for successful scholarly endeavors; and
3) prepare our students for successful professional careers.

MSCE Program: Objectives

The objective of our M.S. program is to produce graduates who possess:

1) in-depth knowledge of at least one area of civil engineering;
2) the ability to successfully complete independent work; and
3) the ability to communicate the results of their work.

MSCE Program: Student Learning Outcomes

1. A mastery of at least one specialization area of civil engineering.
   a. Evidence
      i. Specialization Courses
      ii. Projects/Papers
      iii. MSCE Final Exam

2. The ability to perform independent research through coursework or research project.
   a. Evidence
      i. MSCE Project/Thesis
      ii. MSCE Final Exam

3. The ability to communicate the results of their work.
   a. Evidence
      i. Publications, Presentations, Patents, Awards
      ii. MSCE Final Exam
UK Department of Civil Engineering
Ph.D. Learning Outcomes

Ph.D. Program: Mission Statement

The mission of the University of Kentucky, Department of Civil Engineering Graduate Studies Ph.D. Program is to:

1) Provide opportunities for education, research, and service in a scholarly environment to the Commonwealth, the United States, and the global community;
2) prepare our students for successful scholarly endeavors; and
3) prepare our students for successful professional careers.

Ph.D. Program: Objectives

The objective of our Ph.D. program is to produce graduates who possess:

1) the ability to plan, conduct, complete, and disseminate original research that advances the state of knowledge; and
2) the ability to communicate the results of their work through teaching, oral presentation, or publication at an authoritative level.

Ph.D. Program: Student Learning Outcomes

1. A mastery of at least one specialization area of civil engineering.
   a. Evidence
      i. Ph.D. Specialization Coursework
      ii. Projects/Papers
      iii. Ph.D. Qualifying Exam
      iv. Ph.D. Final Exam

2. The ability to perform creative and independent research.
   a. Evidence
      i. Ph.D. Qualifying Exam
      ii. Ph.D. Research Proposal
      iii. Dissertation
      iv. Ph.D. Final Exam

3. The ability to communicate the results of their work.
   b. Evidence
      i. Publications, Presentations Patents, Awards
      ii. Ph.D. Final Exam
APPENDIX – B
UK Civil Engineering Department
Graduate Student Financial Support Application

Note: All students seeking financial support, including students currently receiving financial support, must complete this form. Only fully completed forms with necessary attachments will be considered. You must have applied and been accepted to Graduate School to be considered for financial assistance by CE Department.

Please check the following
☐ New Application  ☐ Application for Continued Support

Section A: Background Information
First/Given Name: ___________________________  Last/Family Name: ___________________________
Student SSN (or UK ID#) if any: ___________________________
Local Address (if no local address use permanent address):
    Street __________________________________________  Apt # ______________
    City: ___________________________  State: ______  Zip: ___________
Email address: ______________________________________
U.S. Citizen/U.S. Permanent Resident: _____ Yes _____ No
Resident of (circle one) Harlan Co., KY; Lee Co., VA; Claiborne Co., TN; or none of the above.

Section B: Type of Support Requested (rank in order of priority)
Teaching Assistant: _____ Full time or _____ part time
Research Assistant: _____ Full time or _____ part time
Graduate Assistant: _____ Full time or _____ part time

Tuition Support: _____ Yes, Duration: ______________  _____ No
Duration of Support Requested: Start date __________  End date __________

All TA, RA, and GA positions are subject to a mandatory Graduate School screening process, which includes an orientation. Failure to successfully complete this process could result in termination of support. All of these support vehicles are service-based, and portions or all of the support may be subject to various taxes. All support can be terminated due to poor performance.

List ALL of your UK support history (type, duration, and amount. Attach additional pages if necessary):
________________________________________________________________________
________________________________________________________________________
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33
Section C: Academic Information

Undergraduate GPA _____ Undergraduate Institution: ____________________________
Graduate GPA _____ Graduate Institution: ____________________________
GRE: Verbal _____ Quantitative _____
TOEFL (International Students): ________ or IELTS (International Students): ________

Primary Area of Specialization/Interest in CE: (circle one)
Construction Engineering and Management; Environmental Engineering; Geotechnical Engineering; Materials Engineering; Structural Engineering; Transportation Engineering; Water Resources Engineering

Secondary Specialization/Interest in CE

Degree Seeking: MSCE _______ Ph.D. _______ Expected Graduation (Semester/Year): __________
Name of Major Faculty Advisor (if known): ________________________________

Faculty Advisor’s Endorsement Signature: ___________________________ Date: ______________

Please attach a short resume, three letters of recommendation (outside of UK applicants only) and other supporting material.

Section D: Certification

I, ________________________________ (print name) certify that the information provided on this form is accurate and complete. I am aware that any assistance I might receive is subject to the accuracy of the information provided as part of this application.

Applicant’s Signature ___________________________ Date: ______________

Return this form and all required documentation by March 1 (for Fall Semester) or October 1 (for Spring Semester) to the following address:
Suzy Wampler
University of Kentucky
Dept. of Civil Engineering
Lexington, KY 40506-0281, USA
Phone: 859-257-4858 Fax: 859-257-4404 e-mail: suzy.wampler@uky.edu

Note: Only fully completed forms with necessary attachments will be considered for support.

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<thead>
<tr>
<th>For official use only:</th>
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<tbody>
<tr>
<td>Type of Support</td>
</tr>
<tr>
<td>Duration of Initial Support</td>
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<tr>
<td>Total Projected Duration of Support</td>
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<td>Source of Support</td>
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<td>Endowment Account Name</td>
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<td>Tuition Support Amount</td>
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<td>Name of Faculty Advisor/Contact:</td>
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