HANDBOOK FOR GRADUATE STUDENTS

IN

CIVIL ENGINEERING

2008 - 2009

UNIVERSITY OF KENTUCKY
LEXINGTON, KENTUCKY 40506-0281

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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, 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 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-Bac 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 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 they enroll 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 automatically 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 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 of at least 2.8 on a 4.0 scale, a combined score on the Verbal and Quantitative portions of the regular Graduate Record Examination at least 1,000 and 1,100 for Masters and Ph.D., respectively. 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. Students with an undergraduate major other than Civil Engineering must also take undergraduate remedial courses (see Section I-3e).

Students seeking admission to the University Scholar Program may apply for entry to the program after completing at least 100 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.

To be admitted, applicants must have a combined score on the verbal and quantitative portions of the GRE of at least 1,000 and 1,100 for Masters and Ph.D., respectively. 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 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 550 and must be achieved before the applicant can be admitted.

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 one month 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 web site 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 next 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 on the advisory committee 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. Graduate students who complete the minimal ABET/EAC requirements and the master's degree requirements will 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 I-9, and I-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 advisors. Such planning at this 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, and leaving the proposed program to be completed no later than the beginning of the second semester.

c. Classification and Registration

New and readmitted students register during the week prior to the start of classes. See *Schedule of Classes* for dates for each semester on the web. New students are informed of the dates at the time of acceptance. Students who were enrolled in the previous semester may not register at this time.

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.

After consultation and approval, graduate students must take their signed registration materials to the CE office (room 161) before registering by UK-VIP.

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 $40 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 there 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 the departmental Graduate Student Record form with the departmental student records staff.

d. Readmission

A student, who does not enroll for a semester during the 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 past 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.

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.

Starting with the 1997 Fall Semester, incomplete grade "I" will automatically be changed to a failing grade "E" if not removed within a year from the date 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 12 or more semester hours of graduate course with an average 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 average.

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 after the beginning of 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

Master's 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 appropriate Director of Graduate Studies. No activity completed more than 12 calendar years preceding the proposed graduation date will be considered for graduation.

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 appropriate Director of Graduate Studies. Upon favorable review, an extension of no more than five years may be granted.

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 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	Hydraulics & Water Resources Engineering
Constructions Engineering and Management	Structural Engineering
Environmental/Water Quality Engineering	Transportation Engineering
Geotechnical 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 503 Construction Estimating (3, F)

This course investigates the principles of predicting and controlling the cost of construction projects. Items studied include feasibility studies, preliminary and detailed estimating, budgeting, monitoring and variance analysis. Computer applications for construction estimating will be stressed. Prereq: CE 403 and engineering standing or consent of instructor.

CE 505 Construction Project Planning and Management (3, F)

A study of the planning process and fundamental management procedures for construction projects. Special attention given to: planning of methods and resources; use of schedules; monitoring time; managing cash flow and costs; and overall project administration and record keeping. Prereq: CE 403 and engineering standing or consent of instructor.

CE 517 Boundary Location Principles (3, Occasionally)

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 518 Advanced Surveying (3, Occasionally)

Principles of precise survey procedures in triangulation, trilateration, traverse and leveling; adjustment computations; theory and practice of electronic distance measurement; basic geodesy and state plant coordinate systems; application to the horizontal and vertical control of engineering projects review of modern land surveying problems and procedures. Lecture, two hours; laboratory, three hours per week. Prereq: MA 214, CE 211 and engineering standing.

CE 521 Engineering Economy (3, Occasionally)

Economic evaluation and financial analysis of engineering alternatives in which the goal of economic efficiency is applied to engineering design. Prereq: Engineering standing.

CE 525 Civil Engineering Applications of Geographic Information System (3, Occasionally)

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 subbases, 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)

Advance civil engineering fluid mechanics and computation methods.

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 549 Engineering Hydraulics (3, Sp)

Analysis of flow in closed conduits and natural and artificial open channels. Design of hydraulic structures. Prereq:

CE 341, CE 441 and engineering standing. (AEN 545)

CE 552 Water Quality Control Laboratory I (3, Occasionally)

Lectures and laboratory practice in principles, application and interpretation of analytical tests used in water quality control research and process control. Lecture, two hours; laboratory, three hours. Prereq: Engineering standing and 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 556 Solid and Hazardous Waste Management (3, Occasionally)

Study of the generation and management of solid and hazardous wastes. Application of engineering principles to the collection, transport, processing, resource recovery and ultimate disposal of these wastes. Prereq: CE 471G, CE 521 or consent of instructor and engineering standing. (Same as AEN 556)

CE 560 Groundwater Modeling (3, Occasionally)

An introduction to the practical aspects of numerical modeling techniques as applied to the solution of groundwater flow and groundwater pollution problems. Steady state and transient models of regional groundwater flow. Effect of river, pumping wells, and natural geological barriers. Models of regional groundwater pollution. Delineation of capture zones and particle tracking models. Modeling of remedial actions at contaminated sites. Prereq: CS 221 or CS 223 or equivalent, CE 461G or equivalent and engineering standing.

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 580 Asphalt Mix Design and Construction (3, Occasionally)

Design, evaluation, and construction of hot mix asphalt (HMA) using Superpave (Superior Asphalt Pavements). Specifications and quality control of production and construction of HMA. Lecture 2 hours, lab 3 hours per week. Prerequisite: CE 381.

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 585 Civil Engineering Failures (3, F)

Fundamentals of failure investigation and forensicengineering; Failure types and mechanisms; Case studies and

discussions on various constructed facilities. Prereq: CE 382 and engineering standing or consent of instructor.

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.

601 Construction Equipment (3)

Analysis of construction equipment use and economics. Selection and matching equipment for productivity and cost effectiveness. Mathematical simulation of construction operations. Prereq: CE 403, CE 503, or consent of instructor.

CE 602 Construction Administration (3, Sp)

Administration of construction companies and projects, organization, economics, material management, productivity models, labor and equipment tracking, quality control and managerial accounting. Construction labor relations, claims and construction financing are also discussed. Prereq: CE 403, CE 506, or consent of instructor.

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)

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 and 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)

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)

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 33l.

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 (trucking industry, insurance agencies) is also examined. Prereq: CE 539 or consent of instructor.

CE 641 Mechanics of Liquid Flow in Pipes (3, Sp)

Steady and unsteady one-dimensional pipe flow. Water hammer and surge tank analysis. Steady two-dimensional pipe flow. Digital and analog computer applications. Prereq: CE 549.

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 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 aeration, 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 654 Principles of Water and Wastewater Treatment Processes (3, Occasionally)

Physical, chemical, and biological principles of water and wastewater treatment processes. Basic concepts such as chemical kinetics and equilibrium, acid-base chemistry, oxidation-reduction reactions and acid mine drainage, reactor design, mass transfer, and microbial metabolism are emphasized. Prereq: 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 660 Groundwater Hydrology (3, Occasionally)

The equations of saturated and unsaturated groundwater flow, the formulation of boundary value problems, and some analytical methods of solution. Solutions using Fourier series, solutions involving the Fourier transform and the Fourier sine and cosine transforms. The Boltzmann transformation, development of the Philip solution for horizontal and vertical flow. Mathematical statement of the saturated and unsaturated groundwater pollution problem and some analytical methods of solution. The semi-group solution of the resulting evolution equation, examples of solutions using the Laplace transform and the Fourier transform, more complex solutions in two-dimensional and three-dimensional domains, solutions for distributed sources in time and in space, solutions for

time-varied boundary conditions. Prereq: MA 214, CE 461G or equivalent.

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, auto correlation, spectral analysis. Correlation and regression analysis. Linear stochastic models. Introduction to stochastic processes in hydrology, real-time hydrologic forecast (Kalman filter), pattern recognition, and stochastic differential equations. Prereq: MA 214, CE 461G or equivalent.

CE 665 Water Resources Systems (3, Sp Odd Year)

Application of systems analysis, mathematic modeling, and optimization in water resources management and design. Solution of engineering problems found in water supply, water quality, urban drainage, and river basin development and management 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 stormwater 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)

Permeability and capillary flow in soils, mathematical theory of flow through porous media. Flow through anisotropic, stratified and composite sections. Solution by flow net, conformal mapping and numerical methods. Seepage toward wells. Dewatering and drainage of soils. Prereq: CE 471G or consent of instructor.

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)

Fundamental aspects of mechanical behavior of civil engineering materials. Rheology and fracture of asphalt and Portland cement concrete materials. Prereq: CE 381.

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 683 Experimental Structural Analysis (3, Occasionally)

Theory and practice of model analysis to facilitate the solution of unusual problems in structural engineering. Dimensional analysis, similitude requirements, materials, fabrication, loading and instrumentation of models, and interpretation of results.

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 709 Computer Applications in Construction (3, Occasionally)

This course is an advanced design class where students, using the knowledge gained in 500 and 600 level construction courses, learn how to select and implement automation into the construction process. Students investigate commercially available software and its use in managing construction projects. Prereq or concur: CE 503, CE 505, and CE 602.

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 772 Experimental Methods in Soil Mechanics (3, Occasionally)

A comprehensive study, including literature review, and experimentation of the instrumentation, methods, and problems associated with the measurement of the behavior and the properties of soil. Laboratory and field methods used in research and practice. Lecture and recitation, two hours; laboratory, three hours. Prereq or concur: CE 671 or consent of instructor.

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)

Review of methods of analysis of simple structural systems. Effects of wind, earthquake, traffic and machinery loads. Matrix methods for complex dynamic structural systems, random vibrations of structures. Prereq: CE 582 or consent of instructor.

CE 783 Structural Finite Element Analysis (3, Occasionally)

Theoretical, conceptual and computational aspects of the finite element method are presented. Development of the element relationships, element calculations, assembly and efficient solution of the finite element method are emphasized. Finite element formulations developed for 2D, 3D axisymmetric and plate bending problems in structural mechanics for both static and dynamic applications. Prereq: MA 432G and EGR 537, or CE 682 or consent of instructor.

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, Chair and Director of Undergraduate Studies; Structural Engineering

Gail M. Brion, Raymond-Blythe Professor; Environmental Engineering

Sebastian Bryson, Assistant Professor, Geotechnical Engineering

Mei 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, Assistant Professor; Water Resources

Hans Gesund, Professor; Structural Engineering

Paul Goodrum, Associate Professor; Construction Engineering

Issam E. Harik, Raymond-Blythe Professor; Structural Engineering

Michael Kalinski, Assistant 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

Yi-Tin Wang, Professor; Environmental Engineering

Scott A.Yost, Associate Professor; Hydraulic Engineering

d. Core Courses

For each Specialty area in Civil Engineering, there are certain civil engineering core courses, which are required for theses 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 503 Construction Estimating

CE 505 Construction Project Planning and Management

CE 602 Construction Administration

Environmental Engineering

CE 555 Microbial Aspects of Environmental Engineering

CE 652 Fundamentals of Water Quality Control II

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 549 Engineering Hydraulics

CE 641 Mechanics of Liquid Flow in Pipes

CE 642 Open Channel Flow

Structural Engineering

CE 582 Advanced Structural Mechanics

CE 585 Civil Engineering Failures

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 531 Transportation Systems Operations

CE 533 Railroad Facilities Design and Analysis (odd years only)

CE 534 Pavement Design, Construction and Management

CE 539 Transportation Systems Design

CE 634 Traffic Characteristics

CE 635 Highway Safety

Water Resources

CE 665 Water Resources Systems

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 503 Construction Estimating

CE 505 Construction Project Planning and Management

CE 534 Pavement Design, Construction and Management

CE 531 Transportation Systems Operations

CE 546 Fluvial Hydraulics

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 of Odd Year

CE 634 Traffic Characteristics

CE 782 Dynamics of Structures

d. Courses Offered in Fall Semester of Even Year

CE 784 Shell Structures

CE 651 Fundamentals of Water Quality Control I

e. Courses Offered Every Spring Semester

CE 533 Railroad Facilities Design and Analysis

CE 539 Transportation Systems Design

CE 549 Engineering Hydraulics

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 602 Construction Administration

CE 605 New Engineering Enterprises

CE 635 Highway Safety

CE 652 Fundamentals of Water Quality Control II

CE 679 Geotechnical Earthquake Engineering

CE 687 Advanced Metal Structures

CE 779 Advanced Geotechnical Engineering

f. Courses Offered in Spring Semester of Odd Year

CE 517 Boundary Location Principles

CE 642 Open Channel Flow

CE 783 Structural Finite Element Analysis

g. Courses Offered in Spring Semester of Even Year

CE 518 Advanced Surveying

CE 684 Slab and Folded Plate Structures

h. Courses Offered Periodically

CE 602 Construction Administration (Spring every year)

CE 631 Urban Transportation Planning

CE 633 Air Transport Engineering

CE 634 Traffic Characteristics

CE 662 Stochastic Hydrology

CE 665 Water Resources Systems

CE 667 Stormwater Modeling

CE 709 Computer Applications in Construction

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/gs/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: http://www.rgs.uky.edu/gs/gradhome.html.

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: http://www.rgs.uky.edu/gs/gradhome.html.

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

All graduate programs are administered by the Graduate School, which will award these degrees. The Masters programs in Civil Engineering offer students a wide variety of program options for advanced study. They 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. 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 degrees can be considered terminal, or they can lead to further study for the Ph.D. degree at the University of Kentucky or elsewhere. The requirements for the various Masters degree options are as follows:

a. MSCE Program Plan A (24 Hour Plus Thesis Option) – Heavily research oriented.

A minimum of 24 semester hours of graduate course work plus a thesis are required. 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.

A minimum of 30 semester 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 independent study components totaling a minimum of 3 credit hours, or by completing at least three credit hours of CE 790 or CE 791 (CE 790 and CE 791 will require submitting a report). A list of courses with imbedded independent study component is provided at the end of this section. All graduate students are strongly encouraged to consult with their academic advisors regarding their degree plan options during their first semester at UK.

Students who wish to complete the independent work requirement by choosing from an approved curriculum of courses containing integral 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 during their first semester.

The requirement for all independent work (CE790 and/or CE791) must be satisfied under the direction of the faculty advisor for the student. The advisor will assign, monitor, and evaluate the student's work as part of the specific course. Written reports will be required to represent the independent 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.

List of graduate-level courses with independent work component.

Course	Independent Work Component	Course	Independent Work Component
CE 602	0.5 hour	CE 534	1.0 hour
CE 605	0.5 hour	CE 539	1.0 hour
		CE 631	1.0 hour
CE 531	0.5 hour	CE 633	1.0 hour
CE 533	0.5 hour	CE 634	1.0 hour

CE 635	1.0 hour	CE 665	1.0 hour
		CE 667	1.0 hour
CE 549	1.0 hour		
CE 546	0.5 hour	CE 580	1.0 hour
CE 641	0.5 hour	CE 581	1.0 hour
CE 642	0.5 hour	CE 585	1.0 hour
		CE 586	0.5 hour
CE 555	1.0 hour	CE 681	1.0 hour
CE 653	0.5 hour	CE 682	0.5 hour
CE 655	1.0 hour	CE 686	0.5 hour
		CE 687	1.0 hour
CE 560	0.5 hour	CE 782	0.5 hour
CE 660	0.5 hour	CE 783	1.0 hour
CE 662	0.5 hour	CE 784	0.5 hour

c. The MCE Program (30 Hour Non-Thesis Options) - Broadly design oriented

The Master of Civil Engineering is a professionally oriented degree. The primary objective of the MCE program is to enable practicing engineers with several years of experience to continue the pursuit of technical knowledge in a manner well suited to their individual needs. It incorporates sufficient flexibility to accommodate the needs of a diverse student body while assuring that each graduate will have attained the attributes essential to successful civil engineering practice.
The MCE degree requires completion of a minimum of 30 semester hours of graduate course work. In addition, the student must demonstrate, to the satisfaction of his/her Master of Civil Engineering Committee, reasonable competence and/or knowledge in the following areas essential to Civil Engineering practice: Professionalism, Human Awareness, Impacts of Civil Engineering Systems, Foundations of Technical Knowledge, Management and Decision Making Skills, All Specialties of Civil Engineering, Depth in Civil Engineering, Supportive Disciplines, Design.

d. University Scholar Combined BS-MS Program (also see Section I-1c)

Both the thesis and the non-thesis options of the MSCE program are available to students in this program. There are two degree options available to CE University Scholars. One is a Masters degree in Civil Engineering, and the other is a Masters degree in Manufacturing Systems Engineering. All CE undergraduate Students choosing the thesis option will have to complete a minimum of 150 credit hours of course work. At least 24 of these hours must be at the graduate level, including not fewer than 12 hours at the 600 or 700 levels. In addition, these students must register for 6 credit hours of CE 768 in order to work on their thesis. Extension time for completing a thesis may be granted through the registration in " 0-credit hours" of CE 748.

Students choosing the non-thesis option will have to complete a minimum of 156 credit hours of course work, including 3 hours of CE 790 or CE 791. Of the 156 hours, at least 30 must be at the graduate level, including no less than 15 hours at the 600 or 700 levels.

2. Residence Requirements

a. On-Campus Residence

A minimum of 15 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 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 program.

b. Deficiencies

A student may not be able to immediately begin a full graduate program leading to the MSCE or MCE 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 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 or the MCE degree.

Candidates for the MSCE or the MCE 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 MCE 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 or MCE will be awarded only if the student has attained a grade point average 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

Graduate students who have completed all of their course work and are working on their MSCE thesis, at least half-time, must register for 0 credit hour of CE 748 each semester for a maximum of six semesters.

The thesis must be developed under the direction of a 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 or the MCE 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. Two of the three must be members of the graduate faculty and one of these 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 will 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 thesis director 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) Request that the Director of Graduate Studies initiate action to set up an examining committee and schedule the Final Examination. The request must be made at least two 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 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) Request that the Director of Graduate Studies initiate action to set up an examining committee and schedule the Final Examination. This request must be made at least two 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 needs to properly document the list of his/her classes with imbedded independent hours totaling a minimum of three hours.
(3) Take Final Examination.

c. For the 30 Hour, MCE Option, the following procedures apply:

(1) Request that the Director of Graduate Studies initiate action to set up an examining committee and schedule the Final Examination. This request must be made at least two weeks prior to the anticipated date of the Examination. Pay particular attention to the Graduate School deadlines.
(2) Submit a list of graduate classes, and other credentials to the Chair of the examining committee.
(3) Take 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, all 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. Normally, at least one year of full time course work at the University of Kentucky (one year residence credit) beyond the masters degree will be required before the student is allowed to take the Qualifying Examination.

2. Major Professor

A Major Professor and Advisory Committee guide each student's program. Their purpose 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, serves as advisor to beginning graduate students. 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 also provides advice to the student and specifically sets requirements (within applicable Program, Graduate School, and University regulations), which the student must

meet in pursuit of the doctorate. 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 planning, the Advisory Committee also administers the Qualifying Examination, supervises the preparation of the Dissertation, and serves as the Examining Committee that administers the Final Examination on 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 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.

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. 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 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. It is taken after the Committee feels that the student has completed all necessary course work, and is ready to direct full efforts to the Dissertation. The Qualifying Examination must be scheduled through the Director of Graduate Studies and approved two 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 parts: written, and oral. 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. Actual Presence on Campus

The purpose of a 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 an essential part of scholarly life.

Subject to approval by the individual doctoral program, students may fulfill the three-year doctoral residence requirement utilizing one of the three models listed below.

Model I

1) master's degree or 18 graduate hours at the University of Kentucky, or transfer of residence credit from an awarded master's at another accredited school; *plus*,
2) two consecutive semesters enrolled full-time, i.e., 9 or more credits per semester (may include combined first and second summer sessions); *plus*,
3) completion with a grade of "S" of two consecutive full-time* semesters (9 credits each) or three consecutive part-time** semesters (6 credits each) of course CE 769 after successfully passing the Qualifying Examination.

Model II

1) master's degree or 18 graduate hours at the University of Kentucky, or transfer of residence credit from an awarded master's at another accredited school; *plus*,
2) enrollment part-time (at least 6 graduate credits per semester) during three consecutive semesters; *plus*,
3) completion with a grade of "S" of two consecutive full-time* semesters (9 credits each) or three consecutive part-time** semesters (6 credits each) of course CE 769 after successfully passing the Qualifying Examination.

Model III

1) master's degree or 18 graduate hours at the University of Kentucky, or transfer of residence credit from an awarded master's at another accredited school; *plus*,
2) accumulation of 24 graduate credits at the University of Kentucky (exclusive of short courses; no more than nine of these 24 credits may be earned in summer sessions) during three consecutive academic or calendar years; *plus,*
3) completion with a grade of "S" of two consecutive full-time* semesters (9 credits each) or three consecutive part-time** semesters (6 credits each) of course CE 769 after successfully passing the Qualifying Examination.

*Students electing the full-time option may substitute a summer term for one of the semesters by enrolling in 3 credits of CE 769 in the first summer session and 6 credits of CE 769 in the second summer session.

**Students electing the part-time option may substitute a summer term for one of the semesters by enrolling in 6 credits of CE 769 in the second summer session only.

With the written recommendation of a candidate's advisory committee and with the approval of the appropriate Director of Graduate Studies and the Graduate Dean, specified graduate course work may be taken in lieu of all or part of the residence credit (course CE 769) requirement. The student need not be physically present on campus while enrolled for credit after the Qualifying Examination. While there is generally no formal class work attached to these credits, and in some cases the student may not be on the campus, full tuition costs are assessed in that students who are preparing their Dissertations are utilizing University resources such as libraries, Computing Center, and Major Professors' and committee members' time and energy.

Note: The semester during which the student takes the Qualifying Examination may be counted for residence credit **only** if the date of successful passage is within six weeks (three weeks for the second summer session) of the first day of classes.

Candidates who have fulfilled the above requirements, but who have not yet defended the Dissertation, are required to remain continuously enrolled in course CE 749 (0 credit hours) each semester until the Dissertation is completed and defended. Such registration enables the University to keep accurate records of degree candidates and facilitates rapid and accurate information processing.

Exceptions to this normal pattern may be made with the approval of the Dean of the Graduate School upon the written recommendations of the student's advisory committee and the Director of Graduate Studies, which clearly demonstrate that the principle of residence is preserved.

b. Post Qualifying Examination Residency Requirements

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
• 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.

Semester of the qualifying exam can count toward the post-qualifying residency requirement:
• if formal Request to Schedule the qualifying exam is submitted within first six weeks of the semester
• exam can be taken at any time during the semester

2) Students that passed the qualifying exam prior to the end of summer session II, 2005, the one-year 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 may 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 revisions before the Final Examination. A majority of the Advisory Committee core members must indicate that the form 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.

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.

9. 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 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 notification by the Major Professor that the Dissertation has been distributed to members of the Advisory Committee, the Director of Graduate Studies will advise the Graduate School of the intent to conduct the Final Examination. At this time 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 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 prior to signing the Dissertation Approval Form. Thus, most revisions should have been completed at an earlier time.

The Dissertation Approval Form, along with a typewritten copy of the Dissertation, must be presented to the Graduate School before the Final Examination will 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 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 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 reexamined; that is if reexamination is deemed appropriate. When conditions set by the Dean have been met, the candidate may be reexamined. 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.

10. 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 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, Research Assistants, or Graduate Assistants, depending on the source of the funds and duties and responsibilities. A Graduate Assistant may take on a combination of teaching and research assignments.

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, GA)

(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, RA, and GA 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, RA, GA, 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 the applicable 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, GA 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, Research Assistant, or Graduate 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), and Graduate Assistants (GA)

(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).

b. All Assistants

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

Course Load* Semester Hours	4-week Intersession Work Load	8-week Summer Session Work Load	Regular Session Work Load
15	Not Permitted	Not Permitted	0
14	0	0	0
13	0	0	5
12	0	0	10
11	0	0	15
10	0	0	20
9	0	0	25
8	0	0	30
7	0	4	35
6	0	14	40
5	0	23	40
4	0	32	40
3	14	40	40
2	32	40	40
1	40	40	40

*May exclude certain courses (such as CE 768, CE 769, CE 790, and CE 791) if the research effort in these courses is part of the work assignment and is simultaneously being used to satisfy degree requirements.

5. Selection and Appointment of TA, RA, GA

a. Application for Assistantships

Any graduate student may apply for an assistantship (TA, RA, GA) 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, RA, and GA appointments 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 Department and identified as planning to obtain Ph.D. degrees here, 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 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) All Assistants must maintain satisfactory academic records and progress toward degrees; 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 will not be renewed if the Assistant's service to the University is unsatisfactory.

(4) Appointments cannot be renewed if funding is unavailable.

(5) 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 can 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 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-ships 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, 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 that the individuals employed in a service capacity and is required to meet a firm teaching or research schedule during normal class hours. To secure such certification, the assistant must obtain the proper form from the departmental staff, complete the form and have it signed by the faculty supervisor, and then return it to the office for the Chair's signature.

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 can only delay the application process. However, the applicants are welcome to send a 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. Form an 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 Graduate School through 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 realistic graduation target dates.

6. Schedule 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.

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 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):

_____

_____

_____

_____

_____

_____

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: _____MS _____ Ph.D. **Expected Graduation (Semester/Year):** _____

Name of Major Faculty Advisor (if known): _____

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

Name of Faculty Advisor in your area: _____

Faculty Advisor's Endorsement Signature: _____ Date: _____

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 February 15 (for Fall Semester) or October 15 (for Spring Semester) to the following address:

Elizabeth Nodurft
University. of Kentucky
Dept. of Civil Engineering
Lexington, KY 40506-0281, USA
Phone: 859-257-4858 Fax: 859-257-4404 e-mail: <enodurft@engr.uky.edu>

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

For official use only:

Type of Support _____

Duration of Initial Support _____

Total Projected Duration of Support _____

Source of Support _____

Non-Endowment Support Amount _____

Endowment Support Amount _____

Endowment Account Name _____

Tuition Support Amount _____

Name of Faculty Advisor/Contact: _____