

UNDERGRADUATE STUDY
IN
CIVIL ENGINEERING



Department of Civil Engineering
University of Kentucky
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To Our Civil Engineering Students:

As you have already discovered, the academic program structure at the University of Kentucky is very diverse and complex. In your undergraduate Civil Engineering program, you have many choices and will have to make many decisions. I hope that this Handbook will help you from your first day on campus until you receive your Bachelor of Science in Civil Engineering degree.

The Handbook will give you a better understanding of the Civil Engineering degree program, as well as your responsibilities and opportunities while attending the University of Kentucky.

The Civil Engineering Student Handbook contains information on the Civil Engineering curriculum and degree requirements, electives, and optional concentrations. If you do not find the answers to your questions here in this Handbook, please see your academic advisor, or stop by the Civil Engineering office in room 161 Raymond Building and see Ms. Suzy Wampler (suzy.wampler@uky.edu or (859) 257-4858), Student Affairs Officer for Civil Engineering, or contact me in room 354C Raymond Building (scott.yost@uky.edu or (859) 257-4816). You can also find information on the College of Engineering and CE web pages at

<http://www.engr.uky.edu/> and <http://www.engr.uky.edu/ce/>

Another very valuable web site is found at the University's Central Advising office <http://www.uky.edu/US/> which contains the University of Kentucky Advising Syllabus and other important information.

My faculty colleagues and I welcome you to the Civil Engineering Department.

Sincerely,



Scott Yost
Associate Professor and
Director of Undergraduate Studies

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INTRODUCTION

The purpose of this Handbook is to provide a source for information that is most significant to students and their advisors. While most of the content of the Handbook is available in other references, the Department has found it convenient and useful to compile this information in a readily accessible, single document format. The Handbook contains information concerning admission to the College, the Civil Engineering curriculum, course prerequisite requirements, academic standards to be achieved, requirements for graduation, and much more. The material is arranged alphabetically, by topic, for convenience and ease of location. In cases in which the official wording of a regulation seems confusing, we have attempted to provide clarification. In the sections on chemistry, mathematics, English, and UK Core we have explained the College's requirements and have provided advice on how to select courses that are appropriate for our students. Our objective has been to provide a source of information that will be both valuable and informative to our students throughout their academic careers. If we have not achieved this objective, we would welcome suggestions for improvement.

ABET ENGINEERING CRITERIA

ABET, Inc. is the body responsible for accrediting all Engineering, Engineering Technology, Applied Science and Computer Science Programs in the US and many international institutions as well. The Engineering Accreditation Commission (EAC) reviews all engineering programs at the University of Kentucky and elsewhere. Furthermore, to be a licensed professional engineer in the state of Kentucky, and many other states, requires that you have an EAC/ABET accredited degree.

The ABET Engineering Criteria has been revised to return to the roots of engineering accreditation in which the founders stated "... has no authority to impose any restrictions or standardization upon engineering colleges, nor does it desire to do so." They further stated, "On the contrary, it aims to preserve the independence of action of individual schools and to promote the general advancement of engineering education." In updating the engineering criteria, ABET has striven to keep the criteria flexible in order to accommodate new forms of endeavor that use an engineering education or derivative of allied science or practices as a base. Thus, the philosophy of the change is to allow greater flexibility in the development of engineering programs and in the accreditation process as well as to emphasize Continuous Quality Improvement (CQI) in the educational mission of colleges and universities. This change in philosophy is necessary since the educational system is faced with the challenge of training young adults to be ultimately able to resolve ever increasing educational demands. Consistent with this new philosophy, the Civil Engineering program has established the following broad goals:

- 1) Set educational objectives consistent with ABET criteria and with the College of Engineering's mission and goals using input from students, faculty, alumni, and employers.
- 2) Develop a process for ongoing evaluation and review of the objectives.
- 3) Ensure that the program curriculum and processes support educational objectives.

Vision and Mission Statements

All activities conducted by the Civil Engineering Department are designed to fulfill its Vision and Mission statements. These statements are listed below:

Vision Statement

To be recognized nationally and internationally for excellence in Civil Engineering education, research and service.

Mission Statements

- To provide education, research, and service in a scholarly environment for our constituents and the citizens of the Commonwealth, the Nation, and the World.
- To prepare CE students for successful scholarly endeavors.
- To prepare CE students for successful professional careers.

Educational Objectives

The Program Educational Objectives for the civil engineering program reflect the mission of the Department of Civil Engineering. They are important for successful professional practice and the ability to pursue advanced degrees. Civil Engineering graduates from the University of Kentucky will:

- Excel in Civil Engineering or a related career.
- Create ethical and sustainable solutions.
- Seek professional licensure.
- Embrace life-long learning.

Student Outcomes

Civil engineering education focuses on outcomes rather than simply on input. As part of the preparation process, the Civil Engineering Department Faculty, students, and industry advisory board have adopted the Engineering Criteria outcomes and have defined specific student outcomes to be achieved by the civil engineering students at the University of Kentucky. These student outcomes are:

- a) An ability to apply knowledge of mathematics, science, and engineering.**
- b) Ability to design and conduct experiments, as well as to analyze and interpret data.**
- c) An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.**
- d) An ability to function on multi-disciplinary teams.**
- e) An ability to identify, formulate, and solve engineering problems.**
- f) An understanding of professional and ethical responsibility.**
- g) An ability to communicate effectively.**
- h) The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.**
- i) A recognition of the need for, and an ability to engage in life-long learning.**
- j) A knowledge of contemporary issues.**
- k) An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.**

As students in the civil engineering program, you will be expected to demonstrate competence in these outcomes.

ABSENCES

Attendance and Completion of Assignments

Students are expected to carry out all required work, including homework and laboratories and to take all examinations during the class period designated by the instructor.

All instructors will determine policies regarding completion of assigned work, attendance in class, absences at announced or unannounced examinations, and excused absences for their courses. This policy shall be presented in writing to each class at its first or second meeting. Failure to complete assignments, attend class or be present for examinations in accordance with the announced policies may result in reductions in grade as determined by the instructor except in the case of excused absences.

Excused Absences:

The following are defined as excused absences:

1. Illness of the student or serious illness of an immediate family member. The instructor has the right to request appropriate verification.
2. The death of a member of the student's immediate family. The instructor has the right to request appro-

priate verification.

3. Trips for members of student organizations sponsored by an academic unit, trips for University classes, and trips for participation in intercollegiate athletic events. When feasible, the student must notify the instructor prior to such absences. In no case shall such notification occur more than one week after the absence. Instructors may request formal notification from appropriate university personnel to document the student's participation in such trips.
4. Major Religious Holidays. Students are responsible for notifying the instructor in writing of anticipated absences due to their observance of such holidays no later than the last day for adding a class.

Students missing work due to an excused absence bear the responsibility of informing the instructor about their excused absence. Notification must be given within one week following the period of the excused absence, except where prior notification is required. Students must also make up any missed work. The instructor shall give the student an opportunity to make up the work missed during the semester in which the absence occurred, if feasible. The student shall also be given the opportunity to make up examinations missed due to an excused absence during the semester in which the absence occurred, if feasible.

Excessive excused absences, or timing, may prevent a student from satisfactorily completing work for a course. If this is the case, the instructor shall counsel the student about the options of an I-grade or withdrawal from the course for that semester (see GRADES).

ACADEMIC BANKRUPTCY

The University has recognized that students may encounter academic difficulties for a variety of reasons. This happens most frequently at the beginning of the program, or in cases where a student is pursuing an inappropriate course of study. Such students may be afforded a “second chance” if they satisfy the conditions that allow them to petition for “academic bankruptcy”. Rules must be followed precisely. Bankruptcy is available only to students who have interrupted their studies at the University of Kentucky for at least two years.

An undergraduate student who has been readmitted through the usual channels after an interruption of two or more years may request academic bankruptcy in the Academic Dean’s office. Normally, the student must complete at least one semester (12 credit hours) with a grade point standing of 2.0 or better after readmission. Academic bankruptcy means that the University of Kentucky will not count any of the grades in computing the UK grade point average. For Engineering Standing in Civil Engineering, this means that the last grade earned in a bankrupted course will be counted toward the computation of the engineering standing grade point average (see ADMISSION TO THE DEPARTMENT OF CIVIL ENGINEERING).

ACADEMIC OFFENSES

The University Senate designates two actions as “academic offenses” – cheating and plagiarism. The following, taken from “Student Rights and Responsibilities,” describes these offenses: beginning with the words *Students shall not plagiarize, cheat, or falsify or misuse academic records.*

Senate Rule 6.3.1: PLAGIARISM

All academic work, written or otherwise, submitted by students to their instructors or other academic supervisors, is expected to be the result of their own thought, research, or self-expression. In cases where students feel unsure about a question of plagiarism involving their work, they are obliged to consult their instructors on the matter before submission.

When students submit work purporting to be their own, but which in any way borrows ideas, organization, wording or anything else from another source without appropriate acknowledgment of the fact, the students are guilty of plagiarism.

Plagiarism includes reproducing someone else's work, whether it be published article, chapter of a book, a paper from a friend or some file, or whatever. Plagiarism also includes the practice of employing or allowing another person to alter or revise the work which a student submits as his/her own, whoever that other person may be. Students may discuss assignments among themselves or with an instructor or tutor, but when the actual work is done, it must be done by the student, and the student alone.

When a student's assignment involves research in outside sources or information, the student must carefully acknowledge exactly what, where and how he/she has employed them. If the words of someone else are used, the student must put quotation marks around the passage in question and add an appropriate indication of its origin. Making simple changes while leaving the organization, content and phraseology intact is plagiaristic. However, nothing in these Rules shall apply to those ideas which are so generally and freely circulated as to be a part of the public domain.

Senate Rule 6.3.2: CHEATING

Cheating is defined by its general usage. It includes, but is not limited to, the wrongfully giving, taking, or presenting any information or material by a student with the intent of aiding himself/herself or another on any academic work which is considered in any way in the determination of the final grade. The fact that a student could not have benefited from an action is not by itself proof that the action does not constitute cheating. Any question of definition shall be referred to the University Appeals Board.

Senate Rule 6.3.3 FALSIFICATION OR MISUSE OF ACADEMIC RECORDS

Maintaining the integrity, accuracy, and appropriate privacy of student academic records is an essential administrative function of the University and a basic protection of all students. Accordingly, the actual or attempted falsification, theft, misrepresentation or other alteration or misuse of any official academic record of the University, specifically including knowingly having unauthorized access to such records or the unauthorized disclosure of information contained in such records, is a serious academic offense. As used in this context, "academic record" includes all paper and electronic versions of the partial or complete permanent academic record, all official and unofficial academic transcripts, application documents and admission credentials, and all academic record transaction documents. The minimum sanction for falsification, including the omission of information, or attempted falsification or other misuse of academic records as described in this section is suspension for one semester.

Penalties for Academic Offenses (Also see the Senate Rules listed in Section 6.4.0)

The minimum penalty for an academic offense is for the instructor to award a grade of zero for the assignment on which the offense occurred, if there are no prior offenses or letters of warning in the student's record. Otherwise, if the student has previously received a letter of warning, the instructor must assign a grade of E or F for the course. If the offense is particularly egregious, and if the chair approves, the instructor may also forward the case to the responsible dean with a recommendation for a penalty of XE or XF in the course in which the offense took place. Neither the repeat option nor withdrawal may be used to remove an XE or XF given for an academic offense. If a prior academic offense has been recorded in the University Registrar's Office, the minimum penalty shall be suspension for one semester. Penalties more severe than the minimum may be imposed where warranted by the circumstances:

- A** **Suspension:** forced withdrawal from the University for a specified period of time, including exclusion from classes, termination of student status and all related privileges and activities. If a student while on suspension violates any of the terms set forth in the nature of suspension he or she shall be subject to further discipline in the form of dismissal. The penalty of suspension shall normally apply to semesters (or other academic terms as appropriate) following imposition of the penalty by the Provost. With the consent of the student and the dean of the college in which the offense occurred, the Provost may fix an earlier date for suspension. In any case in which the suspension is imposed by the last day to drop a course with no record, it shall apply to that semester. In case of any student who is graduating, the suspension shall apply to the final semester before scheduled graduation. Suspension for an academic offense shall be noted in the student's permanent academic record, and shall appear on all transcripts for a period of three years beyond the conclusion of the suspension. (US: 3/7/88)
- B** **Dismissal:** termination of student status subject to the student's readmission. The conditions for readmission will be specified at the time of dismissal. The student may be readmitted to the University only with the specified approval of the Provost upon recommendation of the Appeals Board. Dismissal for an academic offense shall be noted in the student's permanent academic record, and shall appear on all transcripts for a period of three years from the student's readmission to the University. (US: 3/7/88)

- C** **Expulsion:** permanent termination of student status, without possibility of readmission except upon showing that the findings of fact which formed the basis of the action were clearly erroneous. (To be invoked only in unusual circumstances and when the offense committed is of such serious nature as to raise the question of the student's fitness to remain a member of the academic community.) Expulsion for an academic offense shall be noted in the student's permanent academic record, and shall appear on all transcripts permanently. (US: 3/7/88)

Appeals

Procedures for disposition of cases of academic offenses are detailed in "Student Rights and Responsibilities" (see also, Information Sources). A student accused of such an offense should obtain a copy of this publication and become familiar with its contents. The student may appeal: (1) the determination of guilt and (2) the severity of the sanction if more than the minimum sanction is recommended. The appeal must be filed in writing with the Academic Ombudsman within 10 working days after the student's notification of the sanction. It shall be the obligation of the student to provide the instructor with a current address and to keep the instructor advised of changes in address. The student shall have the right of class participation and attendance during the consideration of any appeal. (**Note:** Only if a student appeals the severity of the sanction, the Appeals Board may assume admission of guilt.)

ACADEMIC OMBUDSMAN

The University has established the Office of Academic Ombudsman to mediate grievances that sometimes arise between students and the officers or faculty of the University. The function of the Office of Ombudsman is to provide a mechanism for handling issues for which no established procedure exists, or for which the established procedures have not yielded a satisfactory solution. The authority of the Ombudsman is restricted to issues of an academic nature only; but may help students resolve other types of problems by referring them to the correct office. The Ombudsman does not as a rule become involved in a problem until other channels have failed to resolve the question at issue (see also COMPLAINTS). The Office of the Ombudsman is located in 109 Bradley Hall (859) 257-3737.

ACADEMIC SUSPENSION AND SCHOLASTIC PROBATION

The University Senate allows colleges to establish policies pertaining to academic probation and suspension that are more severe than those of the University as a whole. The section of the Handbook entitled REINSTATEMENT should be consulted for rules pertaining to students who have been suspended and who are planning to apply for reinstatement. Probation and Academic Suspension rules apply to the College of Engineering.

1. Any engineering student who has completed two or more semesters at UK and who fails to maintain a cumulative UK GPA of 2.0 or higher will be suspended from the College of Engineering and will not be readmitted until this GPA is 2.0 or higher.
2. Any student enrolled in the College of Engineering who earns a UK GPA of less than 2.0 in any semester will be placed on academic probation.
3. Any student on academic probation who fails to earn a 2.0 or higher semester GPA will be suspended from the College of Engineering and will not be readmitted until he or she has obtained a semester GPA of 2.0 or higher for one semester and the student's cumulative UK GPA is 2.0 or higher.
4. Students who are suspended twice from the College of Engineering will not be readmitted.

ACT AND SAT

All beginning freshmen and transfer students that have earned fewer than 24 semester hours of credit at another university must submit the results of either the ACT or the SAT. To be acceptable, the test must have been taken within five years of the date application is made to the University. A student that has taken the ACT must arrange to have a score report sent to the University Admissions Office at the time application is made for acceptance into the University.

Test scores affect not only admission to the University, but placement in chemistry, English, and mathematics courses (see CHEMISTRY, ENGLISH, and MATHEMATICS for details).

ADMISSION TO THE UNIVERSITY

Requirements and deadlines for admission to the Lexington Campus of the University of Kentucky change annually. Current information may be obtained from the Director of Admissions, 100 Funkhouser Building, University of Kentucky, Lexington, Kentucky 40506-0054; Phone (859) 257-2000 or (800) 432-0967 or visit their website at <http://www.uky.edu/Admission/>. See also the sections on General Education Transfer Agreement and Transfer Course Acceptability along with the relevant pages of the University Bulletin. A current PDF copy of the Bulletin can be downloaded at <http://www.uky.edu/registrar/content/2015-16-bulletin-table-contents>.

ADMISSION TO THE DEPARTMENT OF CIVIL ENGINEERING

There are two levels of admission into the Department of Civil Engineering and the College of Engineering. The first level is called Pre-Engineering. Students admitted to the College of Engineering (see FRESHMAN ADMISSION) will be accepted into the Pre-Engineering Program of Civil Engineering upon their request. While students enrolling in Pre-Engineering may choose a department, transfers are permitted between departments of the College of Engineering. Application forms for a departmental transfer are available from the Office of Student Records in room 373 Ralph G. Anderson (RGAN) Building.

The second, and more advanced, level of admission to the Department and the College is called Engineering Standing. Entry to this level normally is by application from the Pre-Engineering program, though transfer students meeting the requirements stated below could be admitted to Engineering Standing directly upon completing the application for Engineering Standing.

Admission to Engineering Standing in the Civil Engineering Department - Application for Engineering Standing may be made upon completion of the Civil Engineering core curriculum:

| | |
|----------------------|--|
| Writing: | CIS/WRD 110 Comp and Com 1 (UKCore), or Equivalent |
| Chemistry: | CHE 105 and CHE 107 |
| Physics: | PHY 231(UKCore) and PHY 241(UKCore) |
| Calculus: | MA 113, MA 114, and MA 213 |
| Engineering Courses: | EGR103 (UKCore), CE 106, CE 211, and EM 221 |

and a total of 45 credit hours of course work acceptable toward the degree. A minimum core grade point average (core GPA) of 2.50* and a C or better in each core course are required for unconditional acceptance into Engineering Standing.

Students who do not meet the unconditional acceptance criteria but have achieved a core GPA of at least 2.25* may request a review of their application by the Department of Civil Engineering Academic Appeals Committee. This review** determines whether the student should be granted a waiver of the unconditional acceptance criteria. Reviews are conducted in January and August. If the Committee decides against the Applicant, but remedial action could improve the Applicant's chances of success, then the committee will so state and the Department will forward the recommendation(s) to the Applicant.

A student may apply twice for Engineering Standing. If a student is denied Engineering Standing after two applications, the student will be terminated from the Civil Engineering program.

Applications for admission into the Engineering Standing level of the Civil Engineering Program are available in room 161 Raymond (OHR) Building (Civil Engineering Office) and should be submitted as soon as the requirements have been met. Engineering Standing is prerequisite for all 300***, 400 and 500 level Civil Engineering courses.

* The policy of the Department of Civil Engineering is to calculate the core GPA using all grades (including those at other colleges and universities), except for those in which an official repeat option has been exercised (maximum of three). Transfer students may also exercise repeat options.

** Applications for admission based on departmental review must include a written statement describing personal motivation, work experiences, career plans, rationale for waiver, and any other information the applicant considers relevant to the admission decision. In addition, the CE Academic Appeals Committee will consider rank order of core GPA compared with that of other applicants, grades in engineering courses, UK GPA, and resources of the department will be considered in the acceptance or rejection decision.

*** If your schedule is such that you need to register for 300-level courses while completing the Engineering Standing core curriculum above (i.e. to maintain full-time status), see the Director of Undergraduate Studies for a possible waiver of the Engineering Standing prerequisite.

ADVANCED PLACEMENT (AP) PROGRAM

The Advanced Placement Program was designed by the College Entrance Examination Board to allow senior students in high school to demonstrate that they have gained proficiency in certain college level courses by passing an examination prepared by the Board. AP exams are given while the student is still in high school, and the scores are forwarded to the Admissions Office of the University. For many courses a score of at least 3 on an exam will provide University credit for the course. For more complete information on the program the student should refer to the University Bulletin under Special Academic Programs.

Inquiries regarding the Advanced Placement Examination should be addressed to Director of Admissions, Freshman Student Contact, Admissions Office, 100 Funkhouser Building, University of Kentucky, Lexington, Kentucky 40506-0054. Telephone numbers are (859) 257-2000 or (800) 432-0067. UK's College Board Code is 1837.

ADVISING AND MONITORING STUDENT PROGRESS

Comprehensive advising and monitoring the progress of our students is important to their success in the Civil Engineering program while they are becoming educated for their professional careers. Effective advising and monitoring helps ensure that students matriculate through the program in a timely fashion. But advising is not just about curricular issues, it is about their career, graduate school, internships, coops, and other professional issues. Hence both faculty and advising staff need to work together to make this a successful experience for our students and graduates. The following policy and guidelines will help students, advising staff and faculty know what is expected from advising and monitoring of the student progress in the Civil Engineering Program.

Entering the College of Engineering:

The College of Engineering advises all entering freshmen students. It is the role of the professional staff advisors in the Freshman Engineering Advising Center to assist each freshman student in the transition from high school to college. Freshman advisors include all the professional personnel in the Student Services, Co-Op, Women in Engineering and Minority Student Offices. These easily accessible advisors work with the students and parents throughout the admission, advising, registration, and orientation process.

The advisors in the Dean's office work with the Civil Engineering Department faculty and staff to be aware of the first year curriculum, and more generally engineering standing requirements and program course preferences articulated by the faculty. The faculty, through the DUS and Chair, will ensure that the Dean's office advisors know the current practices, course preferences and requirements for the first three semesters of the Civil Engineering program.

All transfer students, and some freshman who come to UK with significant AP and/or college credit, are advised directly by faculty, who are involved in advising pre-civil engineering students, and staff in the Civil Engineering Program, as described in the sections below.

Pre-Civil Engineering Advising:

The primary focus in this phase of advising is to ensure that the students are on track to obtain engineering standing. Without standing, student shall not be allowed to take any CE 300 level or above course, and hence effectively are not admitted into the program.

After the identified civil engineering students have completed their first three semesters of course registration, based on the advising received from the college's freshman advisors (advising through the end of the freshman year), the students' records are transferred (during the summer between freshman and sophomore years) to the Civil Engineering Department. The department's Student Affairs Officer and the DUS will then advise all pre-civil engineering students (students from the freshman advising program and all transfer students) until they have earned Civil Engineering Standing. There are many issues in this phase of a students' academic career, especially for transfer students. Because of the unique cases and potential need for extra attention, the Student Affairs Officer and DUS are tasked to help the students navigate the Civil Engineering Standing requirements. Besides the engineering standing requirements, such issues as repeat options, course equivalencies, academic bankruptcy, probation and suspension, engineering standing appeals, summer course selections, among other issues, apply to many of the pre-civil engineering students. The Student Affairs Officer and DUS are best equipped to work with the students on these various is-

sues. The attention to detail needed during the students attainment of engineering standing allows for close monitoring of the students' progress.

As the student achieves Engineering Standing, they are assigned a Civil Engineering faculty advisor based on their area of interest in Civil Engineering. The department encourages all students to introduce themselves to their faculty advisor, as well as seek their input for career, co-op, internship or graduate school questions/issues. Students can change their faculty advisor at any time with a simple request to the Student Affairs Officer.

Civil Engineering Advising:

After the students obtain Civil Engineering Standing, they will be advised, until graduation, by their chosen faculty advisor. It is anticipated that as the students' focus shifts from academic questions to career oriented questions, the faculty are the best source of information. The DUS and Student affairs officer will always be available in curricular matters as needed/requested by the students or faculty advisors.

During this phase of advising, the main academic goals are for the faculty advisors to help students select a technical elective (chosen from any 300 level or above CE course, that is not already a requirement), the two design electives (chosen from a prescribed list of CE courses), a Math/Science elective (chosen from a prescribed list of courses), the engineering science elective, the supportive elective (any course, as long as it is not a lower level course than a required course) and/or UKCore electives (selected from prescribed lists).

Monitoring Student Progress:

The goal of monitoring student progress are: 1) ensure efficient migration of the student through the program, 2) maintain the prescribed academic standards, and 3) ensure the student fulfills all of the prescribed graduation requirements. Besides the automated academic system that tracks the students' progress through the program (courses completed, grades, GPA's, pre-requisite checks, etc.), the Student Affairs officer's primary responsibility is monitoring the students' progress. Using the civil engineering advising worksheet, which shows the curriculum that the student must follow, the Student Affairs Officer regularly (after grades are posted each semester) updates the worksheet based on the students' documented performance. During the updating period, the Student Affairs Officer will ensure the student is making satisfactory progress so that the following are being satisfied: UKCore fulfillment with courses chosen from the University's prescribed list of classes, courses specifically required by the program faculty, Engineering Standing requirements, graduation requirements, minimum grade requirements, fulfillment of minor requirements, transfer courses applied correctly based on UK's course transfer policies, and minimum number of hours needed for graduation. If there are irregularities or problems, the Student Affairs Officer will notify the student and advisor.

Once a student obtains engineering standing, the faculty advisors receive an updated copy of this worksheet every semester for their advisees prior to scheduling registration advising conferences. As a student nears graduation, the college of engineering reviews the students' records (prior to the beginning of the graduating semester) as a check to see that all program and graduation requirements will be completed. This final external check ensures the integrity of the program.

Other Advising Issues:

There are two main milestones (after acceptance into the college of engineering) in becoming a graduate of the civil engineering program: engineering standing and graduation. A student must obtain Civil Engineering Standing in order to advance into their junior year and on to graduation. Knowing that the first milestone has historically been the greatest obstacle to students' ultimate success, there are several additional procedural issues that are used to maintain the integrity of the system while keeping a student centered focus.

The requirements for engineering standing are well defined and widely published. During the semester in which a student is scheduled to complete the remaining courses for Civil Engineering Standing, typically the first semester of the sophomore year, all students are required to apply for Civil Engineering Standing during their advising sessions with the Academic Affairs officer or the DUS. Standing shall not granted until all grades are posted for the semester, and all transfer credits have been processed (for those students taking engineering standing courses elsewhere). It is the program's responsibility to have all engineering standing decisions finalized prior to the beginning of the semester to give students opportunity to plan and register for the remaining CE courses. This includes automatic as well as appeal cases. No student will be allowed to register for any CE 300 level, or above, course until Civil Engineering Standing has been approved. There will be three exceptions to this policy:

- 1) Transfer students who have much of their first two years complete, but need only take a few Engineering Standing core courses (all other possible courses shall be given priority over any CE 300 level or above courses.), and have a record of solid academic performance.
- 2) UK students who have demonstrated solid academic performance in all the completed Civil Engineering Standing core courses, are enrolled in all remaining engineering standing courses and who are maintaining the minimum C requirement, based on the posted midterm grades.
- 3) Students who are granted conditional acceptance to engineering standing and are needing to fulfill any conditions stipulated by the appeals committee.

The Director of Undergraduate Studies shall determine whether or not a student is eligible for an exception. During the time between advanced registration (12th week of the semester) and the beginning of the following semester, pre-civil engineering students will be allowed to register for any eligible class, except for the CE 300 level, or above, courses. Once engineering standing is achieved, processed and approved, the Student Affairs Officer will lift the engineering standing hold, allowing students full access to the eligible CE courses.

APEX Degree Audit

The purpose of the APEX degree audit is to provide the campus community with an accurate representation of each University of Kentucky degree program and minor as they are encoded and approved for live usage. *For Students:* The APEX degree audit software will offer an opportunity to evaluate a student's current progress within their respective degree program and minor. Also provided to students are the means to explore their options from among a list of degree programs, majors, and minors. The students' exploration can extend to the planned course feature allowing each student to be prepared for both their scheduled advising session and registration period. Students can find the APEX link in their **myUK** web portal.

ADVISORS

Academic records are maintained in the Civil Engineering Department office and each student is assigned a permanent advisor by the department's Student Affairs Officer (**also see Mandatory Program Advising above**). The faculty advisors provide a broad range of personalized advice and assistance to their advisees. Students should feel free to visit their advisor not only during periods of advance registration but also at any other time advice and assistance are desired or needed.

| Faculty Member | Office Address | Telephone Number | E-mail Address |
|------------------------|--------------------------|------------------|---------------------------|
| Blandford, George | 161A Raymond Bldg | 257-1855 | ceg119@uky.edu |
| Brion, Gail | 367 Raymond Bldg | 257-4467 | gail.brion@uky.edu |
| Bryson, Sebastian | 254 Raymond Bldg | 257-3247 | sebastian.bryson@uky.edu |
| Chen, Mei | 267 Raymond Bldg | 257-9262 | mchen@enr.uky.edu |
| Dadi, Gabriel | 151C Raymond Bldg | 257-5416 | gabe.dadi@uky.edu |
| Davis, Brad | 373 Raymond Bldg | 257-4916 | dbraddavis@uky.edu |
| Erhardt, Greg | 261 Raymond Bldg | 323-4856 | greg.erhardt@uky.edu |
| Fox, James | 354G Raymond Bldg | 257-6886 | jffox@enr.uku.edu |
| Gesund, Hans | 375 Raymond Bldg | 257-4823 | hgesund@enr.uky.edu |
| Harik, Issam | 373 Raymond Bldg | 257-3116 | harik@uky.edu |
| Kalinski, Michael | 255 Raymond Bldg | 257-6117 | michael.kalinski@uky.edu |
| Mahboub, Kamyar | 263 Raymond Bldg | 257-4279 | kc.mahboub@uky.edu |
| Maloney, Bill | 151B Raymond Bldg | 257-3236 | william.maloney@uky.edu |
| Pennell, Kelly | 363 Raymond Bldg | 218-2540 | kellypennell@uky.edu |
| Ormsbee, Lindell | 233 MMRB | 257-6329 | lindell.ormsbee@uky.edu |
| *Souleyrette, Reginald | 259 Raymond Bldg. | 257-5309 | souleyrette@uky.edu |
| Stamatiadis, Nick | 265 Raymond Bldg | 257-8012 | nick.stamatiadis@uky.edu |
| Taylor, Timothy | 151A Raymond Bldg | 323-3680 | tim.taylor@uky.edu |
| Wang, Y.T. (Ed)** | 365 Raymond Bldg | 257-5937 | ywang@uky.edu |
| Yost, Scott *** | 354C Raymond Bldg | 257-4816 | scott.yost@uky.edu |

* Dr. Souleyrette is the Department Chair.

** Dr. Wang is the Director of Graduate Studies (DGS).

*** **Dr. Yost is the Director of Undergraduate Studies (DUS).**

Names, office locations and University telephone numbers for civil engineering advisors are listed on a directory outside the CE office. The table above includes this information plus e-mail addresses for all Civil Engineering Faculty Members.

AMERICAN SOCIETY OF CIVIL ENGINEERS STUDENT CHAPTER (Professor George Blandford, Faculty Advisor)

The University of Kentucky Student Chapter of the American Society of Civil Engineers is an organization in which membership is open to all civil engineering students. Officers are elected annually on a calendar year basis from the active membership. Nominal annual dues are charged each member to support various chapter activities. Additional support is provided by the Department using alumni donated funds.

The objectives of the Chapter are:

- Encourage the development of a professional consciousness,
- Afford an opportunity for civil engineering students to become acquainted and to practice working together effectively,
- Promote a spirit of collegiality among members, and
- Provide friendly contact with the faculty and the engineering profession.

To achieve these objectives, the Student Chapter sponsors group activities. For example:

- Field trips to civil engineering construction projects, seminars and lectures given by professional engineering personnel,
- Academic consultations and discussions among members,
- Intramural athletic games,
- Concrete canoe contest,
- Steel bridge contest, and
- Other projects based on the interest of the student members.

The student chapter is involved with a number of community service and outreach activities. A joint meeting is held each year with the Bluegrass Branch of ASCE during the spring semester and students are encouraged to attend Branch meetings throughout the year. Several student officers attend the Workshop for Student Chapter Leaders each year.

An Ohio Valley Student Conference is held each year at the school that hosts the Ohio Valley Student Competitions (Concrete Canoe, Steel Bridge, and others based on the host school). The UK chapter has hosted several meetings most recently the 2003 meeting. The steel bridge teams have been successful participants in the steel bridge competitions. They have won four competitions and have competed in three national competitions: University of Florida (1995), State University of New York - Buffalo (1996), and Colorado State University (1998). The concrete canoe team competed in the 2003 National Concrete Canoe competition hosted by Drexel University in Philadelphia, PA.

National student members of the Student Chapter also enjoy all privileges offered by the National ASCE. For example, awards, scholarships, discount on purchasing published professional materials, and discounted group insurance rates. Furthermore, membership initiation fees are waived for National student members upon graduation from the University.

Information concerning the Student Chapter and applications for membership can be obtained from the Officers, the Faculty Advisor of the Chapter, or the CE office.

AUDITING COURSES

Students enrolled at the University may audit any course as part of their regular schedules. This enables students to become familiar with an area of interest for which they may not need credit or quality points, or to preview courses.

Auditors

- Must attend classes regularly (at least 80 percent excluding excused absences).
- Do not receive grades or course credit.
- Cannot be considered for admission to earn credit for the course unless admitted to a degree program in the

University as a regular student.

The credit hours of audited classes are included in a student's course load for purposes of fee assessment, determination of full- or part-time status, and determination of maximum permissible course load. They are not included for purposes of satisfying degree requirements, establishing veteran's benefits eligibility, or establishing full-time status for foreign students.

Any change from audit to credit or credit to audit by a student regularly enrolled in a college must be accomplished by the last day to withdraw without a W appearing on the student's transcript. Students who enroll in a course as auditors but who do not attend class regularly may be assigned a W on the final grade report.

BSMBA PROGRAM (Program Director –Kim Sayre)

Many engineers eventually move into management positions or start their own company. The Engineering/MBA Dual Degree Program has been created to provide engineers the opportunity to prepare themselves for that career move by earning an Engineering Degree and a Master of Business Administration (MBA) in 5 years. The dual degree program includes three components:

1. enrichment activities during the undergraduate senior year
2. one-year accelerated MBA
3. exclusive 2-week international study

The Engineering/MBA Dual Degree Program is open to engineering and computer science students who have completed their junior year with a GPA ≥ 3.25 . Each summer students who meet these criteria will be invited to apply for admission to the dual degree program. Note: Students that receive an invitation but have more than 3 semesters of undergraduate study remaining should defer application until the next year. Scholarships are available up to \$30,000 per student.

Admission to the Engineering/MBA program does not constitute admission to the MBA degree program. Program participants must formally apply for admission to graduate school during their senior year. Admission to the Engineering/MBA Dual Degree Program entitles students to participate in the senior year enrichment activities; for possible scholarship assistance in the MBA program; and participation in the international experience. Below is an overview of the program including a timeline.

Years 1 through 4

- Take engineering courses as normal and before start of MBA take MBA prerequisites: ECO 201 & 202; ACC 201 & 202.
- Apply to Engineering/MBA Dual Degree Program the summer before final 2-3 semesters of undergraduate coursework. Students who have completed their third year of engineering work (minimum of 90 credits) with a GPA ≥ 3.25 will receive an invitation to apply.
- In addition to regular course work during the senior year:
 - One enrichment activity per semester will be provided. Examples include: Industry Leader Seminars, Workshops and Company Visits.
 - Take GMAT or GRE and Apply to Graduate School before Spring Semester starts. Fellowships for the MBA tuition are available based on the following scores:
- GMAT score ≥ 660 or GRE ≥ 320 = full in-state tuition & fees
- GMAT score 630 – 659 or GRE 314 – 319 = half in-state tuition & fees

Year 5

- One Year Accelerated MBA Program
- Take classes and project work with other One Year Accelerated MBA students (starting in 8-week summer session plus Fall and Spring Semesters)
- International Study
- Exclusive 2 week international study after the completion of the MBA. Includes meetings with Business Executives in a variety of industries and cultural immersion via guided tours. The Dual Degree Program pays for the international study tuition, lodging and transportation within Europe. Students are responsible for international study application fees, air fare to/from Europe, and for meals.

Year 6, one more semester if needed

If student would have graduated with undergraduate degree in December, the final semester of undergraduate studies is deferred until the completion of the MBA and International Study since these steps have fixed start

dates.

To learn more about the international study component of the Engineering/MBA Dual Degree Program, see past student blog posts at: bsmba.engineering.uky.edu. If you have any questions, please see Kim Sayre, 220L MMRB Bldg. 859-257-3343, kim.sayre@uky.edu, or Harvie Wilkinson, MBA Program Director, 145 Gatton Building, 859-257-1924, harviewilkinson@uky.edu.

BY-PASS EXAMINATIONS

Special Examinations, CLEP Examinations, and Advanced Placement Examinations are explained in appropriate sections of the University Bulletin with some information also included in this Handbook. The term “by-pass examination” has no official meaning. Students may request a special exam to show knowledge of a particular course, and hence receive credit for the course if s/he passes the special exam. See the Director of Undergraduate Studies for more information.

CAREER SERVICES

The College of Engineering has a highly effective arrangement with the University Career Center to provide direct career services to the students within the College of Engineering. The career advisor is also there to provide a link to the services that the University Career Center offers’ in its main building. Through these services students have a number of resources at their disposal to prepare them for full time careers upon graduation.

Students and alumni have unlimited use of the University Career Center’s Katherine Kemper Career Library, located in the Stuckert Building on North Central campus. The library has a wealth of job search tools including books and videos on job search strategies, networking, resume preparation, interviewing tips, as well as directories of companies in which students may identify potential employers. There are also internet accessible computers available and a section filled with company literature where students may conduct company research. The University Career Center also provides a videotaped mock interview service, which allows students to practice interviewing and see for themselves what they are doing well and what they might improve upon.

Additional services include:

- (1) Wildcat Career Link: This system is the University’s web based job search tool that features several job search functions. First, it allows students to post their resumes in on-line resume books, so that employers may view them at any time. Secondly, students are able to query a database of job openings, from any internet accessible computer. Thirdly, the system allows students to apply for and schedule campus interviews with company recruiters from the convenience of their home computers. Finally, the system allows students to communicate via e-mail on an ongoing basis with mentors in their field of study.
- (2) Engineering Career Services provides information on engineering job opportunities to your email account by utilizing “jobs listservs” that students can sign up for. Announcements regarding potential job openings, companies interviewing on campus, career fairs, and other relevant information pertaining to a job search are emailed in the College of Engineering on an ongoing basis.
- (3) A career advisor is also available to meet with students on an individual basis to address their unique job search and career-related concerns.

The College of Engineering hosts two career fairs each year. The Society of Women Engineers Student Chapter organizes the Fall Career Fair. In addition, graduating seniors should attend the “Evening with Industry” event the evening before career fair. During this event, seniors are able to mingle informally with employers who will be attending the Career Fair, providing them additional contact with employers looking to hire College of Engineering students.

The “Career Fair” and “Evening with Industry” provide companies with an excellent opportunity to recruit graduating engineers. At the same time, these companies have an opportunity to introduce themselves to all undergraduate students and to fill company part-time and co-op needs. The “Evening with Industry” portion of the program offers company representatives the opportunity to meet graduating engineers in a relaxed atmosphere while enjoying refreshments. Over fifty engineering companies attend each year.

The Engineering Student Council hosts a Spring Career Fair. This event is now part of the university-wide career fair, with nearly one-third (30) of the companies represented being engineering companies.

When in doubt about their employment options, students are encouraged to meet regularly with their career advisor to learn how they might improve their chances for successful employment upon graduation. The College of

Engineering Career center encourages all seniors and graduate students to:

- (1) Register with the University Career Center in the Stuckert Building (corner of Rose Street and Rose Lane), or online at www.uky.edu/careercenter; this will give you accessibility to employers who call in job vacancies;
- (2) Submit an electronic resume through Wildcat Career Link; and
- (3) See Ilka Balk (285 RGAN Building; ilka.balk@uky.edu) or call at (859) 257-4178 to review job search strategies, interviewing and other job related information.

In addition, the Department has a standing offer with its industry supporters to advertise any full-time job opportunities. Each year several companies set up employment interviews in the building with the assistance of the Department's clerical staff in addition to the Career Center's on campus interviews.

CHANGE IN PROGRAM REQUIREMENTS

When requirements for an undergraduate degree program are changed after a student has enrolled in it, the student has the option of fulfilling either the old or the new requirements. This does not apply to students who interrupt their studies for more than two semesters. In such cases, the College Dean shall decide which requirements they are to fulfill.

If, in fulfilling the old requirements, students find that required courses have been eliminated or substantially revised, they may substitute other courses with the approval of the Dean of the College or the Director of Undergraduate Studies. In this eventuality, however, students may not be forced to comply with the new requirements.

Students who are absent from the University of Kentucky and attend another university or community college shall be deemed to have interrupted their studies unless advance approval had been obtained to take specific courses as a transient or visitor student. Students who interrupt their enrollment at the University of Kentucky in order to take courses for credit at another institution without prior approval will be considered to be transfer students when they apply for readmission to the College and will be subject to the rules that are in effect at the time they resume their programs.

CHANGING MAJOR

Transfer applications into the College of Engineering are available in Student Records, 375 Ralph G. Anderson (RGAN) Building. On-campus transfer students must be accepted into a specific department. Engineering and Pre-Engineering students who decide to transfer from one engineering program to another within the College must apply for admission to the new department. Application forms should be submitted before the advance registration period for the term in which the student plans to transfer to the new degree program. Admission to the new degree program is not automatic and criteria that are presented in the Handbook section, **ADMISSION**, will be applied to students planning to transfer into Civil Engineering.

On-campus students who decide to change from an engineering major to a major other than engineering are normally required to do so preceding the advance registration period. Such students should check with the college into which they plan to transfer for specific instructions for the procedure to be followed. The student will have to go to Student Records, 375 Ralph G. Anderson (RGAN) Building to be released from the College of Engineering.

CHANGING SCHEDULE

During designated "drop/add" registration periods, students may change their schedules using **myUK** <https://myuk.uky.edu>.

CHEMISTRY

All students in the civil engineering program must complete (Chemistry) CHE 105 and CHE 107. No chemistry laboratory is required for a degree in civil engineering. Note that the prerequisites for CHE 105 and CHE 107 are listed under **COURSE DESCRIPTIONS**.

CHI EPSILON **(Professor Jimmy Fox, Faculty Advisor)**

Chi Epsilon is a national Civil Engineering honor society founded at the University of Illinois in 1922. The purpose of Chi Epsilon is to identify the characteristics of the individual Civil Engineer that are fundamental to the successful pursuit of an engineering career and to aid in the development of these characteristics in civil engineering students. Conferring membership on them honors graduate students and faculty. Special recognition is given to outstanding Civil Engineers by elevation to Chapter Honor Member or National Honor Member. The University of Kentucky chapter of Chi Epsilon received its national charter in May 1962 and has hosted the bi-annual National Chi Epsilon Conclave on two occasions, most recently in 1996.

Student membership is opened to junior or senior Civil Engineering students who have completed at least three civil engineering courses. A student classified as a junior must be in the top fifth of the class and a student classified as a senior must be in the top quarter of the class.

Chi Epsilon annually presents the outstanding junior, senior and faculty awards. The Chi Epsilon student members conduct nominations for these awards and the entire civil engineering student body elects the recipients. The engraved plaque awards are presented at the Engineering College Awards Banquet held during the spring semester. The chapter normally honors one of the department's outstanding alumni each semester, which provides an opportunity for the members to become acquainted with many successful practicing engineers.

CIVIL ENGINEERING FACULTY RESPONSIBILITIES

Students should expect the following minimums from each faculty member within the Department of Civil Engineering. Some faculty may include additional items in their course syllabi.

1. Each civil engineering course instructor will provide a course syllabus within the first two class periods. The course syllabus will outline the course procedures and grading policy, which may include weight of homework, quizzes, and final exam; office hours (or other consultation procedures); name of grader or teaching assistant; required textbook, if any; and course content, along with other University required information.
2. Course content will generally follow the description given in the University Bulletin or provided in the course syllabus.
3. Student grades will be based solely on a fair and just evaluation of their performance in the course as measured by the usual university standards and those provided in the course syllabus.
4. Each student will be given a mid-term performance evaluation before the last day to withdraw. This will provide the student with information to assist them in determining their future in each Civil Engineering course. If your mid-term performance is marginal, you should discuss your options and chances for success with the instructor.
5. All homework, quizzes and exams will be based on the material covered in class and the reading assignments.

CIVIL ENGINEERING STUDENT RESPONSIBILITIES

Civil Engineering is a time-honored profession. Thus, each student enrolled in a Civil Engineering class is expected to adhere to the following minimum guidelines. Individual courses may include additional guidelines, in which case you are to adhere to those guidelines/requirements in addition to those listed below.

Professional Ethics

It will be assumed that each student subscribes to a professional code of ethics that is the basis for their behavior. In academics, the ASCE Code of Ethics (7/23/06) can be summarized to state as follows. **Strive to increase the competence and prestige of the engineering profession by acting in such a manner as to uphold and embrace the honor, integrity, and dignity of the engineering profession.** At a minimum, this means that all work handed in under a person's name must be their own work. Any and every case where these ethics are violated will be dealt with according to the provisions in the Student Code (see ACADEMIC OFFENSES section of this Handbook).

Prerequisite Policy

Students are expected to know the material covered in the classes listed as prerequisites. The instructor may spend class time reviewing some of the prerequisite material for your benefit, but ultimate responsibility for knowing the material resides with the student. If you are not familiar with some of the prerequisite material, then it is your responsibility to review the material used in class.

General Comments

1. For each class contact hour, each student is expected to spend 1.5 to 3 hours (more time may be required in some classes) studying the course material outside of class. Students who cannot afford this level of effort are strongly encouraged to take the course in a future semester or reduce the total number of semester hours being attempted.
2. Students are expected to attend class unless they have an excused absence. If you must miss a class it is your responsibility to make up all work covered during your absence from a course. (See ABSENCES section of this Handbook for further details.)
3. Student behavior in class is expected to be consistent with a professional environment.
4. Assigned homework should be completed in the manner requested by the course instructor. Late homework is unacceptable except for unusual circumstances, e.g., an excused absence.
5. While students are encouraged to ask instructors or teaching assistants for help, they should first study the appropriate material. No course instructor, including the course teaching assistants and graders, will tutor nor will they solve your homework problems.

CLASSIFICATION

Undergraduates having completed 29 or fewer credit hours are classified as freshmen, those having completed 30 through 59 credit hours are classified as sophomores, those having completed 60 through 89 credit hours are classified as juniors, and those having completed 90 credit hours or more are classified as seniors. Credit granted by examination is included in determining a student's classification.

The student's classification may affect the:

- Eligibility of the student to take certain courses based on the course number (see COURSE NUMBERING SYSTEM) or course prerequisites (see COURSE DESCRIPTIONS).
- Timing of Advanced Registration - registration priority windows are based on number of earned hours (**not including hours in progress**) and the last digit of the student's ID Number.
- Circumstances under which a student is placed on scholastic probation (see ENGINEERING COLLEGE PROBATION AND ACADEMIC SUSPENSION).
- Eligibility to take a course on a pass-fail basis (see Pass-Fail).
- Eligibility to take the Fundamentals of Engineering (FE) and Fundamentals of Surveying (FS) Examinations (see FUNDAMENTALS OF ENGINEERING EXAMINATION AND FUNDAMENTALS OF SURVEYING EXAMINATION).
- Eligibility of the student to receive certain awards and honors.
- Eligibility of a student employee for pay increases.
- Eligibility to participate in the Co-op program.

Distinctions between the Pre-Engineering and Engineering Standing divisions of the College of Engineering, as they apply to students, are discussed in COLLEGE DIVISIONS.

COLLEGE DIVISIONS

Students who are enrolled in any baccalaureate degree program of the College of Engineering are assigned to one of two divisions of that program. The lower division is "Pre-Engineering" defined broadly as the first one and one-half years of the program. The upper division is "Engineering Standing" and defined broadly as the last two and one-half years. All freshman admissions are to Pre-Engineering. Transfer student admissions are either Pre-Engineering or Engineering Standing depending on the qualifications of the applicant (see also ADMISSION TO DEPARTMENT OF CIVIL ENGINEERING).

Students must be accepted into Engineering Standing of the appropriate degree program in order to be granted a baccalaureate degree from the College of Engineering. Students enrolled in the Pre-Engineering division will progress to the Engineering Standing division upon meeting the criteria given in the section ADMISSION TO THE DEPARTMENT OF CIVIL ENGINEERING.

Students without Engineering Standing are not permitted to enroll in any course for which Engineering Standing is a prerequisite. However, such students may obtain written permission from the Director of Undergraduate Studies to enroll in such classes.

COLLEGE LEVEL EXAMINATION PROGRAM (CLEP)

UK participates in the national testing program of The College Board. CLEP Examinations cover specific material common to courses at many universities. Credit for University courses is awarded to students who obtain the listed scores on the appropriate Examinations.

The Registrar's Office is responsible for all official postings of credit to a student's record. For information regarding the CLEP program and posting of credit, call the Registrar's Office at (859) 257-8729. For information on CLEP exams in general, visit the College Board Web site at: <https://clep.collegeboard.org>.

COMMENCEMENT HONORS

Students who attain a grade point average of 3.8 or higher shall be graduated *Summa Cum Laude*, and students who attain a grade point average of 3.6 to 3.8 shall be graduated *Magna Cum Laude*. Also, students who attain a grade point average of 3.4 to 3.6 shall be graduated *Cum Laude*. These students must have at least sixty credit hours of course work at the University of Kentucky (excluding correspondence study).

COMPLAINTS

Students who have grievances or complaints in academic matters are urged to discuss these with their faculty advisor, Student Affairs Officer, or the Director of Undergraduate Studies. If the advisor cannot resolve the problem, the Director of Undergraduate Studies or the Department Chair should be consulted for advice and action.

In the event that the problem cannot be resolved within the Department, the student should contact the Associate Dean for Administration and Academic Affairs and then feel free to meet with the Academic Ombudsman. The Academic Ombudsman acts as a negotiator between students and the academic staff in cases of alleged unfair interpretations of rules and procedures. The Ombudsman also acts as a liaison by referring and directing the student to the proper University offices. It is the Ombudsman's duty to insure that individuals are treated fairly. The Ombudsman's office is located in 109 Bradley Hall, telephone 257-3737 (<http://www.uky.edu/Ombud/>).

COOPERATIVE EDUCATION PROGRAM

The nationally recognized engineering co-op program provides students the opportunity to gain practical work experience before graduation. By alternating semesters of academic study with semesters of salaried, full-time career-related employment, a full year of engineering work experience can be presented on a graduate resume. Students who wish to participate in the Cooperative Education program in the College of Engineering should contact the Director of Cooperative Education, Ms Ilka Balk in 285 Ralph G. Anderson (RGAN) Building at (859) 257-4178 or ilka.balk@uky.edu or Ms Marsha Phillips in 287 RGAN Building at (859) 257-8863 or marsha.phillips@uky.edu.

To be eligible for this program, students should have a minimum grade-point average of 2.5. In addition, they should complete all the courses in the first two years of the degree program prior to the first work tour. Students will remain on a full-time, continuing student status while they are at work by registering for a one-hour, pass/fail course. The grade, assigned by the director, is based on both a work report written by the student and an evaluation completed by the immediate supervisor. In some states, the co-op work experience may count towards the practical experience required to take the Professional Engineering licensure exam.

The Cooperative Education program contributes significantly to the student's academic motivation, career preparation, and success with job offers upon graduation. One-third of our students and nearly 80 employers nationwide participate in the UK program.

CORRESPONDENCE COURSES

The University maintains an Independent Study Program that offers over 200 college courses and 40 high school courses for credit, as well as several non-credit college-level courses.

A maximum of 30 semester hours of correspondence work may be applied towards the baccalaureate degree. (Refer to DEGREE REQUIREMENTS for information on the acceptability of correspondence work for the last 36 credits presented for the degree.) One year is allowed to complete a correspondence course. **Time extensions are normally not granted.** The Independent Study Office, room 1, Frazee Hall, (859) 257-3466 provides catalogues and

registration forms for these courses.

Credit for correspondence courses taken at other universities after the student has enrolled in engineering at the University of Kentucky may not be allowed unless prior approval to enroll in the course(s) has been received (see TRANSIENT WORK).

If a repeat option is to be used on a correspondence course, the Section entitled REPEAT OPTION should be consulted.

COUNSELING

The student's advisor is prepared to offer advice and counseling on all academic matters of concern to the student. Students are urged to contact their advisors at any time advice and assistance is desired. The Director of Undergraduate Studies serves as support and backup to the advisors.

Professional counseling for personal problems is available through the University Counseling and Testing Center. This Center offers a full range of counseling and testing services to University students. In addition, several non-credit study skills courses and awareness groups are offered each semester by the center to help students in improve study skills, reading speed and comprehension, and vocabulary. Information on these services is available from the Center's office, 106 Frazee Hall (859) 257-8701 (<http://www.uky.edu/StudentAffairs/Counseling/>).

The Center has a staff of professional counselors whose primary function is helping students solve academic, vocational, and personal problems. Typical student concerns include: ineffective study skills and habits, the need for improved reading skills, difficulty in adjusting to the college environment, lack of a specific field of interest, vocational planning, inadequate interpersonal relations, feelings of depression, emotional insecurity, and more specific problems of a personal nature.

All interviews are confidential and voluntary; no student is required to have counseling. Individual testing is available only upon referral by a Center staff counselor. Tests of intelligence, aptitude, achievement, personality, vocational interests, and study skills may be used to aid students in understanding themselves and to increase their efficiency.

The services of the Center are available by appointment to all students enrolled in the University as well as faculty and staff. Call the Center directly at (859) 257-8701 to schedule an appointment or see the online appointment resources (<http://www.uky.edu/StudentAffairs/Counseling/appointment.html>). **Referral from another campus agency or individual is not necessary.**

COURSE CONTENT AND STANDARDS

A student has the right to expect each course to correspond generally to the description in the official Bulletin of the University of Kentucky and the right to be informed in writing at the first or second class meeting about the nature of the course; that is the content, the activities to be evaluated, and the grading practice to be followed (see CIVIL ENGINEERING FACULTY RESPONSIBILITIES). The student shall also be informed whenever factors such as absences or late papers will be weighed heavily in determining grades.

Students have the right to receive grades based only upon fair and just evaluation of their performance in a course as measured by the standards announced by their instructor(s) at the first or second class meeting.

COURSE DESCRIPTIONS

Following are descriptions of many courses required of, or elected by, civil engineering undergraduates. Excluded from this list are the generic UK Core. Credit hours are enclosed in parenthesis following the course title. The terms during which the courses normally are offered are given for courses offered by the Department of Civil Engineering.

BIO 208 Principles of Microbiology (3)

The course introduces fundamental microbiological principles and techniques. Emphasis is placed on structural, functional, ecological and evolutionary relationships among microorganisms, principally viruses, rickettsiae bacteria, fungi and algae. Prereq: High school chemistry recommended.

CE 106 Computer Graphics and Communication (3) F, Sp

Introduction to the use of scale, dimensioning, and orthographic projections. Graphical solution of spatial problems. Integrated application of computer graphics. Lecture, two hours; laboratory, four hours per week. Prereq or coreq: MA 113 or consent of instructor.

CE 195 Independent Work in Pre-Civil Engineering (0-4)

Independent or make-up work for lower division engineering students in the field of civil engineering. May be repeated for a maximum of four credit hours. Prereq: Admission to the College of Engineering and consent of department chair or DUS, and the instructor.

CE 199 Topics in Civil Engineering (Subtitle Required; 1-4) Occasionally

An experimental, topical, department or interdisciplinary course devoted to a special topic of current interest to civil engineering and approved by the Department Chair and the Dean of Engineering. May be repeated to a maximum of eight credits, but not more than four credits may be earned under the same title. Prereq: Consent of instructor.

CE 211 Surveying (4) F, Sp

A comprehensive course in the art and science of surveying as applied to civil engineering, including the use and care of surveying instruments; measurement of horizontal and vertical distances, angles and directions; collection of ground and underground data for the design and layout of roads, buildings, various mineral workings and other structures; and some aspects of the precise determination of position and direction for survey control. Lecture, three hours, laboratory, three hours per week. Prereq: CE 106 and MA 114. (Same as MNG 211)

CE 303 Introduction to Construction Engineering (3) F, Sp

The study of the planning, administration, management, and cost of construction projects and an introduction to the methodology utilized in executing specific designs. Emphasis is placed on the organization of construction firms, development of construction documents, interpretation and analysis of engineering plans and specifications, theory of engineering economics, estimating and quantity take-off, contractual and management systems, scheduling, project administration, and inspection of construction operations. Prereq: CE 106 and engineering standing.

CE 329 Civil Engineering Communications and Teams Lab (1) F, Sp

The class focuses on presenting the proper tools and techniques for oral presentations, identifying the requirements for proper technical writing, and providing students with the means to effectively work within a team environment. Prereq: CIS 111 Comp and Comm II; Engineering standing.

CE 331 Transportation Engineering (3) F, Sp

An introduction to transportation engineering. Development of transportation systems in the United States. Route geometrics and design. Traffic flow characteristics and control. Planning financing and economic analysis of transport facilities. Prereq: CE 211 and engineering standing.

CE 341 Fluid Mechanics (4) F, Sp

Fundamental principles of thermodynamics and fluid flow. Includes fluids at rest, fluids in motion. Continuity, momentum and energy relations, ideal and viscous fluids. Emphasis on incompressible fluids. Description of pumps and open channels. Prereq: PHY 231 and MA 214 and engineering standing.

CE 351 Introduction to Environmental Engineering (3) F, Sp, Sum

Overview of environmental chemistry and microbiology, water quality, water and wastewater treatment, solid and hazardous wastes management, hazardous waste remediation, and air pollution control. Emphasis on the basic science and engineering principles required to understand both natural and engineered systems, as well as the engineering approach to understanding the natural environment and specific treatment mitigation methods. Prereq: CHE 107, MA 214, PHY 231, and engineering standing.

CE 381 Civil Engineering Materials (3) F, Sp

A study of the microscopic and macroscopic structures and properties of materials used in civil engineering construction with emphasis on the relationships of their basic physical and mechanical properties to engineering design and application. Written reports and oral presentation of results will be required. Lecture, two hours; laboratory, three hours. Prereq or concur: EM 302 and Registration in College of Engineering.

CE 382 Structural Analysis (3) F, Sp, Sum

Statically determinate analysis of two-dimensional structures: trusses, beams and frames. Influence lines for truss and beam structures. Displacement calculations using virtual work principles. Statically indeterminate analysis includes approximate, force method and plastic analysis. Prereq: EM 302 and engineering standing.

CE 395 Independent Work in Civil Engineering (1-6) F, Sp, Sum

Individual work on some selected problem in the field of civil engineering. May be repeated for a maximum of six credits. Prereq: Engineering standing or consent of department chair and the instructor.

CE 399 Topics in Civil Engineering (Subtitle required). (1-4)

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 399 number. Prereq: Variable; given when topic identified and registration in the College of Engineering.

CE 401 Seminar (1) F, Sp

A discussion of the ethical and professional aspects of civil engineering practice. Concepts of loss prevention and conflict resolution. Structured small group discussion, oral presentations, and role playing. Lecture, two hours per week. Prereq: Engineering standing and senior classification.

CE 429 Civil Engineering Systems Design (3) F, Sp

The course is designed to provide the graduating civil engineer with an integration of professional practice issues with planning, design, and construction. Topics to be covered will include: development of teaming, problem solving, and decision-making skills; development of written and oral technical communication skills; procurement of professional services; integration of planning, design, and construction activities; integration of environmental, legal, political, and social issues and concerns into the project process. All activities will be conducted in teams. Lecture, three hours; laboratory three hours per week. Prereq: To be taken during the student's last semester.

CE 433 Railway Freight and Passenger Operations and Intermodal Transportation (3) F

Study of the transportation engineering aspects of efficient management of railway operations including freight, passenger, and intermodal transportation. Prereq: CE 331 and engineering standing.

CE 460 Fundamentals of Groundwater Hydrology (3) F

The first course in the physics of saturated flow in porous media. Topics include groundwater occurrence, Darcian flow, well hydraulics, flow nets and layered systems flow. The basic concepts of pollutant movement and unsaturated flow are introduced and case studies are analyzed. Prereq: ME 330 or CE 341 or consent of instructor, and engineering standing. (Same as BAE 438G)

CE 461G Water Resources Engineering (4) F, Sp

A hydrological and hydraulic study of the laws governing the occurrence, distribution, and movement of water and contaminant substances in watershed systems. Meteorological considerations, precipitation, evaporation, infiltration, streamflow, hydrograph analysis, flood routing, open channel hydraulics, culvert design, pump systems, groundwater flow, and frequency analysis. The course also discusses principles of mathematical models that describe the flow processes in a natural watershed and hydraulic systems. Prereq: CE 341 and engineering standing or consent of instructor.

CE 471G Soil Mechanics (4) F, Sp

A study of the strength, deformation and hydraulic properties of soils and their relationship to settlement, stress distribution, earth pressure, bearing capacity and slope stability. Written and oral presentations of student projects will be required. Lecture, two hours; laboratory, three hours. Prereq: EM 302; Prereq or concur: GLY/EES 220; and engineering standing or consent of instructor.

CE 482 Elementary Structural Design (3) F, Sp, Sum

Application of principles of solid mechanics to the design of steel, timber, and reinforced concrete members and structures. Emphasis is on basic ideas and their application to practical design of relatively simple structures according to the building codes. Credit may not be used to satisfy degree requirements if credit is earned in CE 486G or CE 487G. Prereq: CE 382 and engineering standing.

CE 486G Reinforced Concrete Design(3) F

Theory and design of beams, slabs, girders, columns and footings as related to building frames and bridges. Introduction to prestressed concrete, elastic design and ultimate strength design. Concur: CE 487G; Prereq: CE 382 and engi-

neering standing or consent of instructor.

CE 487G Steel Structures (3) F

Behavior, analysis, and design of structural steel columns, laterally braced and unbraced beams, column base plates, beam-columns, directly loaded bolted and welded connections. Introduction to frame stability. Introduction to steel/concrete composite beams. Concur: CE 486G; Prereq: CE 382; and engineering standing or consent of instructor.

CE 499 Topics in Civil Engineering (Subtitle required; 1-4) Occasionally

Devoted to a special topic of current interest in civil engineering. May be repeated to a maximum of eight credits, but only four credits may be earned under the same title. A particular topic may be offered at most twice under the CE 499 number. May be counted as technical or design elective with consent of department chair. Prereq: Variable, given when topic is identified, plus engineering standing.

CE 507 Construction Safety and Health (3) F

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

CE 508 Design and Optimization of Construction Operations (3) F

The course critically examines repetitive operations that occur from project to project and the deterministic approaches used to design and optimize their effectiveness. Scientific techniques used to field measure the efficiency of construction operations are also examined. The primary metrics used to optimization include cost, schedule, and sustainability. Prereq: CE 303, CE 381, and engineering standing or graduate standing.

CE 509 Control of the Construction Project (3) F

This course investigates the principles and practices for the control of budget and schedule for construction projects. Topics studied include: estimating construction costs and developing a project budget, planning construction operations and developing a project schedule, documenting and reporting of project progress and spending, and the management of change of contract amount, contract time, and contract scope of work. Pre or Co-req: CE 508 Design and Optimization of Construction Operations or consent of instructor.

CE 517 Boundary Location Principles (3) Sp

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)

Principles of precise survey procedures in triangulation, trilateration, traverse and leveling; adjustment computations; theory and practice of electronic distance measurement; basic geodesy and state plane coordinate systems; applications 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 or CE 215, and engineering standing.

CE 525 Civil Engineering Applications of Geographic Information Systems. (3)

This class 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). Students will be required to use the GIS ArcInfo to solve a specific individual spatial problem that they propose based on several Civil Engineering databases available to them. Lecture, two hours; laboratory, three hours per week. Prereq: Engineering standing and one of the following: CE 331, CE 341, or CE 471G.

CE 531 Geometric Design and Operations of Roadways (3) F

Analysis of transportation facilities through a diagnostic study of transportation systems with emphasis on design, capacity and safety. Engineering practice oriented toward open-ended design solutions, mostly focused on roadway design. 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; Prereq or concur: CE 471G; and engineering standing.

CE 539 Transportation Systems Design (3) Sp

This course focuses on the design of urban intersections and the procedures used to evaluate the operational level of urban roadway systems. First, a review of urban intersection design principles and aspects is presented. Second, traffic signal timing techniques are reviewed and students are required to use two software packages for evaluation of traffic operation of urban roadway systems. The focal point of the course is a group design project where solutions to accommodate all transportation modes and their issues along a corridor in Lexington are sought. Fieldwork and data collection are part of this course. Lecture, two hours; laboratory, one hour. Prereq: CE 211 and CE 331; CE 531 pre-req or concur.

CE 541 Intermediate Fluid Mechanics (3) F

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

CE 542 Introduction to Stream Restoration (3) Sp, varies

Introduction to principles of fluvial geomorphology for application in restoring impaired streams. Topics, include channel formation processes (hydrology/hydraulics), stream assessment, sediment transport, in-stream structures, erosion control, habitat, and monitoring. Prereq: CE 341 or equivalent and engineering standing or consent of instructor. (Same as BAE 532)

CE 546 Fluvial Hydraulics (3) F

Rainfall physics, principles of erosion on upland areas and construction sites, stable channel design in alluvial material, mechanics of sediment transport, river mechanics, reservoir sedimentation. Prereq: CE 341 or ME 330 and engineering standing. (Same as BAE 536)

CE 547 Watershed Sedimentation (3) F

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

CE 549 Engineering Hydraulics (3) Sp

Analysis of flow in closed conduits and natural and artificial open channels. Design of hydraulic structures. Prereq: CE 541 and engineering standing, or consent of instructor. (Same as BAE 545)

CE 551 Water and Wastewater Treatment (3) Sp

Fundamentals of the design and operation of water and wastewater treatment facilities. Prereq: CE 341, CE 351 and engineering standing or consent of instructor.

CE 555 Microbial Aspects of Environmental Engineering (3) F

Environmental microbiology for engineering students with emphasis on microbially mediated chemical cycles, microbial ecology, and industrial microbiology. Prereq: CHE 105 and 107, engineering standing or consent of instructor.

CE 568 GIS Applications for Water Resources (3) varies

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

CE 579 Geotechnical Engineering (3) Sp

Application of the principles of soil mechanics and structural mechanics to the design of retaining walls, bracing for excavations, footings, mat and pile foundations and to the analysis of the stability of earth slopes. Prereq: CE 471G and engineering standing.

CE 581 Civil Engineering Materials II (3) Sp

Design, evaluation, and construction of Portland cement concrete and hot mix asphalt (HMA). Advanced topics related to high performance concrete and asphalt materials are covered in this course. Prereq: CE 381 and engineering standing.

CE 584 Design of Timber and Masonry Structures (3) F

Current and historic design methods of buildings and their components using wood, wood products, bricks, and concrete blocks. Prereq: Courses in steel and reinforced concrete design at the senior level, or consent of instructor. (Same as ARC 584.)

CE 586 Prestressed Concrete (3) Sp

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

CE 589 Design of Structural Systems (3) Sp

Building codes, design loads, computerized structural analysis and design, gravity and lateral system design, structural system descriptions and selection considerations, and structural contract documents. Prereq: CE 486G and CE 487G, engineering standing or consent of instructor.

CE 595 Independent Work in CE (1-4)

Individual work on some selected problem in the field of civil engineering. May be repeated for a maximum of six credits. Prereq: Consent of department chairperson and the instructor; with engineering standing.

CE 599 Topics in Civil Engineering (Subtitle Required; 1-4) Occasionally

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; engineering standing.

CHE 105 General College Chemistry I (4)

A study of the principles of chemistry and their application to the more important elements and their compounds. Not open to students who have already completed both CHE 104 and 106 or CHE 104 and CHE 108, but open to students who have completed just CHE 104. Prereq: Math ACTE of 23 or above (or Math placement test), or MA 109, or MA 110, or the KCTCS course CHE 102R or CHM 100.

CHE 107 General College Chemistry II (3)

A continuation of CHE 105. A study of the principles of chemistry and their application to the more important elements and their compounds. Not open to students who have completed only CHE 104, but is open to students who have completed both CHE 104 and 106. Prereq: CHE 105 (with a grade of C or better), or both CHE 104 and 108 (with a grade of C or better in CHE 108).

CHE 230 Organic Chemistry I (3)

Fundamental principles and theories of organic chemistry. Prereq: CHE 107 and 113.

CHE 236 Survey of Organic Chemistry (3)

A one-semester course in organic chemistry. Not open to students who have already completed both CHE 230 and 232. Prereq: CHE 107 and 113.

CS 115 Introduction to Computer Programming (3)

This course teaches introductory skills in computer programming using an object-oriented computer programming language. There is an emphasis on both the principles and practice of computer programming. Covers principles of problem solving by computer and requires completion of a number of programming assignments. Lecture, 2 hours; lab, 1 hour per week.

CS 221 First Course in Computer Science for Engineers (2)

Characteristics of a procedure-oriented language; description of a computer as to internal structure and the representation of information; introduction to algorithms. Emphasis will be placed on the solution of characteristic problems arising in engineering. Prereq: Not open to students who have received credit for CS 115.

EE 305 Electrical Circuits and Electronics (3)

A service course covering electrical engineering principles for engineering or science students with majors outside of electrical engineering. Topics include: circuits analysis, power, electronics, digital logic and instrumentation. Prereq: PHY 232, MA 114.

EES 220 Principles of Physical Geology (4)

How the Earth Works: an integrated course in physical geology, covering the physical, chemical and biological processes that combine to produce geological processes. Attention is focused on plate tectonics, earth surface processes, and properties and formation of earth materials. Lab exercises emphasize identification and interpretation of geologic materials and maps. Lecture/Discussion, three hours per week; laboratory, three hours per week.

EES 430 Environmental Geohydrology (3)

A course dealing with the occurrence and movement of water on and beneath the land surface, and its place in the hydrosphere, emphasizing the geologic perspective. Prereq: GLY/EES 220.

EES 550 Fundamental Geophysics. (3)

Survey of active geophysical measurements and passive geophysical observations and their relation to Earth's structure and composition. Investigation of the relationship between Earth's elastic, potentiometric, and thermodynamic properties and traditional geophysical methods for measurement (e.g., gravity, magnetics, seismic, and heat flow). Material will help students improve their quantitative problem-solving abilities, but will also emphasize the visual learning skills commonly developed in the broader geology curricula. Prereq: MA 113, PHY 211 or 213, or consent of instructor. (MA 114 suggested).

EES 585 HYDROGEOLOGY. (3)

A study of the physical aspects of groundwater, including regional flow, well hydraulics, and computer simulation. Prereq: EES 220 and MA 113 or 123.

EM 221 Statics (3)

Study of forces on bodies at rest. Vector algebra; study of force systems; equivalent force systems; distributed forces; internal forces; principles of equilibrium; application to trusses, frames and beams, friction. Prereq or concur: MA 213.

EM 302 Mechanics of Deformable Solids (3)

A study of stress and strain in deformable solids with application primarily to linear elastic materials; stress and strain transformation; simple tension and compression of axial members; torsion of shafts; bending of beams; combined loading of members; buckling of columns. Prereq: Registration in College of Engineering or consent of department chair, and EM 221; Prereq or concur: MA 214.

EM 313 Dynamics (3)

Study of the motion of bodies. Kinematics: cartesian and polar coordinate systems; normal and tangential components; translating and rotating reference frames. Kinetics of particles and rigid bodies: laws of motion; work and energy; impulse and momentum. Prereq: Registration in College of Engineering and EM 221 and MA 214.

EGR 101 ENGINEERING EXPLORATION I. (1)

Engineering Exploration I introduces students to the engineering and computer science professions, College of Engineering degree programs, and opportunities for career path exploration. Topics and assignments include study skills, team development, ethics, problem solving and basic engineering tools for modeling, analysis and visualization. Open to students enrolled in the College of Engineering. Students who received credit for EGR 112 are not eligible for EGR 101. Prereq: Enrolled in the College of Engineering or MA ACT of at least 23 or equivalent.

EGR 102 FUNDAMENTALS OF ENGINEERING COMPUTING. (2)

Fundamentals of Engineering Computing introduces students to the practice and principles of computer programming and computational problem solving. Students will engage in hands-on project-based problem solving using modern computer software and hardware, with a particular emphasis on problems and techniques commonly appearing in various domains of engineering. Open to students enrolled in the College of Engineering. Prereq: Enrolled in the College of Engineering or MA ACT of at least 23 or equivalent.

EGR 103 ENGINEERING EXPLORATION II. (2)

Engineering Exploration II focuses on a semester long engineering design project with students working in teams to apply the skills and tools introduced in EGR 101 or EGR 112 for transfer students and EGR 102. Topics and assignments include more in depth exploration of engineering tools for modeling, analysis, visualization, programming, hardware interfacing, team development, documentation and communication. Students gain experience in project management, identifying constraints, iteration and technical report writing. Prereq: EGR 102 or equivalent; prereq or concur: MA 113.

EGR 199 Topics in Engineering (Subtitle required; 1-3)

An experimental interdisciplinary course devoted to a topic of interest to students in several departments of the college. May be repeated to a maximum of six credits, but only three credits may be earned under the same title. A particular topic may be offered at most twice under the EGR 199 number. Prereq: Variable, given when topic is identified.

EGR 599 Topics in Engineering (Subtitle required; 1-3)

An experimental interdisciplinary course devoted to a topic of interest to students in several departments of the college. May be repeated to a maximum of six credits, but only three credits may be earned under the same title. A particular topic may be offered at most twice under the EGR 599 number. Prereq: Variable, given when topic is identified.

GEO 409G Geographic Information Systems and Science: Fundamentals (3)

Investigation of geographic information systems (GIS) and science (GIScience). Including theory and applications areas. A major portion of the course will be based on use of a current widely-used GIS computer software system. Considered will be aspects of geographic data entry and editing, spatial analysis, and map development and display. Relationship of GIS to the Global Positioning System (GPS) and satellite generated data will be addressed. Prereq: GEO 309.

HON 151 Mirrors of the Universe (Subtitle required). (3)

Honors Humanities topics offered by various professors (topics announced the preceding semester). Whatever the topic, the Honors Humanities courses reflect on the human condition through works of art and literature (including folklore and film), philosophical and religious contemplation and argumentation, and historical narrative. They undertake interdisciplinary investigations of significant intellectual and cultural issues of our past and present (and thus of our future) and are designed to stimulate individual thought as well as develop writing, critical thinking, and small-group discussion skills. Prereq: Membership in Honors.

HON 152 The World as Natural and Physical Phenomena (Subtitle required). (3)

A hands-on, science course for Honors students in which they ask a question requiring scientific analysis, develop a related experimentation regimen, collect data, do the experimentation, analyze the results, draw conclusions and appropriately disseminate the results. Students will directly experience the scientific process to learn how scientists

work. Prereq: Membership in Honors.

HON 251 The World as Human Network and Affairs. (3)

The World as Human Network and Affairs: Courses in this category promote the understanding of individuals in the context of social interactions, groups and societies. The courses will focus on the subjective, intersubjective, and structural aspects of society, with the goal of helping students to enhance their understanding of the phenomenon that is human society. Prereq: Membership in Honors.

HON 252 The World as Imaginative Endeavor. (3)

The creative process and its products and results are the focus of these Honors courses, and include but are not limited to, visual, verbal, musical, spatial, or kinesthetic forms of expression. Readings and final projects vary at the discretion of the faculty. Prereq: Membership in Honors.

MA 109 College Algebra (3) THIS COURSE DOES NOT COUNT TOWARD THE BSCE DEGREE

Selected topics in algebra. Develops manipulative algebraic skills and mathematical reasoning required for further study in mathematics. Includes brief review of basic algebra, quadratic formula, systems of linear equations, introduction to functions and graphing. This course is not available for credit to persons who have received credit in any mathematics course of a higher number with the exceptions of MA 112, 123, 162, 201 and 202. Credit not available on the basis of special examination. Prereq: Two years of high school algebra and a Math ACT score of 21 or above or a Math SAT score of 510 or above; or MA 108R; or a grade of C or better in MA 111; or appropriate score on the math placement test.

Note: Students who earn a grade of “A” in MA 109 have a 70% probability of earning a “C” or better in MA 113. Those who earn a “B” have a 23% chance and those who earn a “C” have only a 15% chance.

MA 110 Algebra and Trigonometry for Calculus (4) THIS COURSE DOES NOT COUNT TOWARD THE BSCE DEGREE

This is a course specifically designed for students intending to enroll in a calculus sequence. Topics will include trigonometric functions, exponentials and logarithms, graphs, polar coordinates, and conic sections. Students may not receive credit for MA 110 and either of MA 109 or MA 112. This course is not available for credit to students who have received credit in any higher numbered mathematics course except for MA 123, 162, 201 or 202. Credit is not available by special examination. Note: Math placement exam recommended. Lecture, three hours; recitation, two hours per week. Prereq: Two years of high school algebra and a Math ACT score of 23 or above, or appropriate score on math placement exam, or consent of department.

MA 113 Calculus I (4)

A course in one-variable calculus, including topics from analytic geometry. Derivatives and integrals of elementary functions (including the trigonometric functions) with applications. Lecture, three hours; recitation, two hours per week. Students may not receive credit for MA 113 and MA 137. Prereq: Math ACT of 27 or above, or math SAT of 620 or above, or MA 109 and MA 112, or MA 110, or consent of the department. Students who enroll in MA 113 based on their test scores should have completed a year of pre-calculus study in high school that includes the study of the trigonometric function. Note: Math placement test recommended.

Note: All curricula in engineering list Calculus I (MA 113) as the first course in mathematics for which credit is awarded toward an engineering degree. However, in many cases, this is not the appropriate first course for entering students to take. Please refer to the Handbook section entitled MATHEMATICS for guidance in selecting the first mathematics course that should be attempted. The importance of following the advice given by the Mathematics department cannot be overemphasized. Enrollment in a math course for which the student is unprepared is a very serious mistake, the consequences of which may never be overcome completely.

MA 114 Calculus II (4)

A second course in Calculus. Applications of the integral, techniques of integration, convergence of sequence and series, Taylor series, polar coordinates. Lecture, three hours; recitation, two hours per week. Prereq: A grade of C or better in MA 113, MA 137 or MA 132.

MA 213 Calculus III (4)

A course in multi-variable calculus. Topics include vectors and geometry of space, three-dimensional vector calculus, partial derivatives, double and triple integrals, integration on surfaces, Green's theorem. Optional topics include Stokes' theorem and the Gauss' divergence theorem. Lecture, three hours; recitation, two hours per week. Prereq: MA 114 or 138 or equivalent.

MA 214 Calculus IV (3)

MA 214 is a course in ordinary differential equations. Emphasis is on first and second order equations and applications. The course includes series solutions of second order equations and Laplace transform methods. Prereq: MA 213 or equivalent.

MA/STA 320 Introductory Probability (3)

Set theory; fundamental concepts of probability, including conditional and marginal probability; random variables and probability distribution (Discrete and continuous); expected values and moments; moment-generating and characteristic functions; random experiments; distributions of random variables and functions of random variables; limit theorems. Prereq: MA 213 or equivalent.

MA 321 Introduction to Numerical Methods (3)

Floating point arithmetic. Numerical linear algebra: elimination with partial pivoting and scaling. Polynomial and piecewise interpolation. Least squares approximation. Numerical integration. Roots of nonlinear equations. Ordinary differential equations. Laboratory exercises using software packages available at computer center. Prereq: MA 114 and knowledge of a procedural computer language is required. (Same as CS 321.)

MA 322 Matrix Algebra and Its Applications (3)

Algebra of matrices, elementary theory of vector spaces and inner product spaces, the solution of simultaneous linear equations using Gaussian elimination and triangular factorization. Orthogonal projections, pseudo inverse and singular value decomposition, least squares approximation. Determinants, eigenvalues and eigenvectors, diagonalization. Prereq: MA 114.

MA 416G Principles of Operations Research (3)

The course is an introduction to modern operations research and includes discussion of modeling, linear programming, dynamic programming, integer programming, scheduling and inventory problems, and network algorithms. Prereq: MA 213 or equivalent. (Same as CS 416G.)

MA 432G Methods of Applied Mathematics I (3)

Partial differentiation, Jacobians, implicit function theorem, uniform convergence of series, line and surface integrals. Green's and Stokes' theorems. Prereq: MA 213 or equivalent.

ME 220 Engineering Thermodynamics I (3)

Fundamental principles of thermodynamics. Prereq: PHY 231. Prereq or concur: MA 214.

MNG 303 Deformable Solids Laboratory (1)

Experimental studies of the mechanical properties of materials and structural elements. Laboratory, four hours per week for three-fourths of the semester. Prereq or concur: EM 302.

MNG 551 Rock Mechanics (4)

Determination of the physical properties of rocks, rock mass classification, stress around mine openings, strain and displacement of the rock mass, rock reinforcement and support, stress interaction and subsidence, strata control. Lecture, three hours; laboratory, three hours per week. Prereq: EM 302, MNG 303, GLY 230, and engineering standing.

PHY 231 General University Physics (4)

First part of a two-semester survey of classical physics. Consequences of the principles of mechanics are developed conceptually, analytically and quantitatively. Lecture, three hours; recitation, one hour per week. Prereq or concur: MA 113.

PHY 232 General University Physics (4)

A general course covering electricity, magnetism, electromagnetic waves and physical optics. Lecture, three hours; recitation, one hour per week. Prereq: PHY 231; concur: MA 213.

PHY 241 General University Physics Laboratory (1)

A laboratory course offering experiments in mechanics and heat, framed in a small group environment that requires coordination and team work in the development of a well-written lab report. Prereq or concur: PHY 231.

PHY 242 General University Physics Laboratory (1)

A laboratory course offering experiments in electricity, magnetism, and light, framed in a small group environment that requires coordination and team work in the development of a well written lab report. Prereq: PHY 241; concur: PHY 232.

STA 381 Introduction to Engineering Statistics (3)

Probability; population and sample distributions; sampling; hypothesis testing; regression on one variable; quality control. Prereq: MA 213.

WRD 110 Composition and Communication I (3)

Composition and Communication I is the introductory course in a two-course sequence designed to engage students in composing and communicating ideas using speech, writing, and visuals. Students will develop interpersonal communication, critical thinking, and information literacy skills by exploring what it means to be engaged, twenty-first century citizens. Students will practice composing, critiquing, and revising ideas based on personal experience, observation, and fieldwork in the community, culminating in several discrete projects using oral, written, and visual modalities.

WRD 111 Composition and Communication II (3)

Composition and Communication II is the advanced course in a two-course sequence designed to engage students in composing and communicating ideas using speech, writing, and visuals. In this course, students will work in small groups to explore issues of public concern using rhetorical analysis, engage in deliberation, compose conscientious and well-developed arguments, and propose viable solutions to different audiences. Students will sharpen their ability to conduct research; compose and communicate in spoken, written, and visual forms; and work effectively in teams through sustained interrogation of an issue. A significant component of the class will involve learning to use visual and digital resources both to enhance written and oral presentations and to communicate with public audiences. Prereq: WRD 110.

WRD 204 Technical Writing (3) F, Sp

Instruction and experience in writing for science and technology. Emphasis on clarity conciseness and effectiveness in preparing letters memos and reports for specific audiences. Prereq: Completion of University Writing requirement.

COURSE LOAD

With the exceptions noted below, the maximum load to be carried during any semester by any student in an undergraduate college (including residence, correspondence, and extension courses) is 19 credit hours. If you are also working while attending the University of Kentucky, see section on EMPLOYMENT for course load recommendations.

The minimum load for a full-time student in an undergraduate college is 12 credit hours in a semester and 6 credit hours in the eight-week summer session. Students enrolling in less than this minimum number of credit hours are classified as part-time.

The maximum allowable load to be carried during any summer term for undergraduate students (including residence, correspondence and extension courses) is 10 credit hours in the eight-week summer session and 4 credit hours in the four-week intercession. The maximum load for undergraduate students for the summer term and intercession is 13 credit hours. The limits on maximum loads are waived in cases where the excess is due to special examination credits.

Students may be permitted by the dean of their college to carry extra credit hours if in the dean's judgment, based upon their past performance, the students can successfully complete the extra hours.

A student on academic probation may take no more than 15 credit hours in a semester, 3 credit hours in the four-week intercession or 7 credit hours in the eight-week summer session.

A student may be registered simultaneously at the University and at another educational institution only with the approval of the dean of the college in which the student is registered at the University of Kentucky. The credit hours obtained at the other institution are considered a part of the student's maximum load. If the simultaneous registration has not been authorized, the transfer of credit from the other institution may be denied.

Fees are based on the course load of the student with part-time students generally paying smaller fees than full-time students. Both full- and part-time students are eligible to: (1) obtain ID cards, (2) vote in student elections,

(3) use the library services, (4) use the check cashing service, (5) use the University's health services, (6) participate in the University of Kentucky Student Group Health Service Plan, and (7) use the campus recreational facilities and services. However, part-time students are not entitled to: (1) obtain activity cards, (2) attend those athletic events and the Central Kentucky Concert and Lecture Series which require the activity card, (3) reside in on-campus housing, (4) obtain student parking permits, and (5) receive most types of financial aid.

COURSE NUMBERING SYSTEM

The following course numbering system is used throughout the University; this system affects eligibility of the student to enroll in certain courses.

| | |
|------------|--|
| 001 to 099 | Non-credit and/or non-degree courses |
| 100 to 199 | Open to freshman; undergraduate credit only |
| 200 to 299 | Sophomore classification or consent of instructor required; undergraduate credit only |
| 300 to 399 | Junior or senior classification required; undergraduate credit only |
| 400 to 499 | Junior or senior classification required; undergraduate credit; graduate credit for non-majors only if letter G appears after number |
| 500 to 599 | Junior, senior or graduate classification required; undergraduate and graduate credit |
| 600 to 799 | Graduate classification required except with special permission from the Deans of the College and the Graduate School. |
| 800 to 999 | Open only to professional students in professional colleges except by permission of College Dean. |

Freshmen and sophomores may be admitted to courses numbered between 300 and 499 upon approval of the instructor and the Dean of the College. Such approval shall be limited to students who have demonstrated superior ability or preparation.

Seniors enrolled in the University Scholars program may be admitted to courses numbered between 600 and 799 and such students will earn graduate credit.

Civil engineering courses also follow the 100-700 labeling, but additionally, the middle digit in the three numbers identifies the area of civil engineering:

| | |
|-----|---|
| X0X | Construction Engineering and Project Management class |
| X1X | Surveying class |
| X2X | Civil Engineering Systems class |
| X3X | Transportation or Transportation Materials class |
| X4X | Hydraulic Engineering class |
| X5X | Environmental/Water Quality class |
| X6X | Hydrology class |
| X7X | Geotechnical Engineering class |
| X8X | Structural Engineering or Structural Materials class |
| X9X | Experimental Civil Engineering class |

COURSE PREREQUISITES

Many courses taken by engineering undergraduates have prerequisite or concurrent (co-requisite) requirements. A student is not permitted to enroll in a course having a prerequisite requirement unless the prerequisite course(s) have been completed successfully. A student is not permitted to enroll in a course having a concurrent requirement unless the concurrent course(s) have been successfully completed or are being taken concurrently. Prerequisite and concurrent requirements for particular courses are specified in Course Descriptions. Of particular importance to transfer students is the requirement that Engineering Standing is a pre-requisite for many junior and senior level courses.

Transfer students may have difficulty with prerequisite requirements of some CE courses due to long sequences of prerequisites including mathematics, physics, and engineering mechanics. Those following the normal schedule (see CURRICULUM) should have little difficulty since the curriculum was set up to avoid prerequisite conflicts. The flow chart on the last page of the Handbook may be useful in identifying the prerequisite sequences that must be followed.

All Civil Engineering students are responsible for consulting with their advisors during each registration period to make certain that prerequisite courses are being scheduled properly. Failure to do so may cause serious problems in scheduling during subsequent semesters. The instructor may drop students who enroll in courses before

completing the appropriate prerequisites from the course.

COURSE SCHEDULING

Civil Engineering students must schedule their academic activities so that they will be prepared to enroll in required or elective courses during the semester in which they are normally offered. This is shown with the course descriptions. The listing should be used as a guide only, since circumstances may require occasional changes in the normal teaching schedule.

CURRICULUM LEADING TO THE BACHELOR OF SCIENCE IN CIVIL ENGINEERING

BACHELOR OF SCIENCE IN CIVIL ENGINEERING CURRICULUM

FRESHMAN YEAR

| | | | | | |
|---------|--------------------------|-----------|---------|----------------------------|-----------|
| EGR 101 | Engg Exploration I | 1 | EGR 101 | Engg Exploration II | 2 |
| WRD 110 | Comp and Comm I (UKCore) | 3 | MA 114 | Calculus II | 4 |
| MA 113 | Calculus I (UKCore) | 4 | PHY 231 | Gen Univ Physics (UKCore) | 4 |
| EGR 102 | Fund Engg Comp (UKCore) | 2 | PHY 241 | Gen Univ Phys Lab (UKCore) | 1 |
| CHE 105 | Gen College Chemistry I | <u>4</u> | UKCore | Social Science Elective | 3 |
| | | | WRD 111 | Comp and Comm II (UKCore) | <u>3</u> |
| | SEMESTER HOURS | 14 | | SEMESTER HOURS | 17 |

SOPHOMORE YEAR

| | | | | | |
|---------|--------------------------|-----------|---------|--------------------------|-----------|
| CE 106 | Computer Graphics/Comm. | 3 | STA 381 | Into Engg Stats (UKCore) | 3 |
| 3CE 211 | Surveying | 4 | EM 302 | Mechan of Deform Solids | 3 |
| CHE 107 | Gen College Chemistry II | 3 | MNG 303 | Deformable Solids Lab | 1 |
| EM 221 | Statics | 3 | MA 214 | Calculus IV (Diff Eqs) | 3 |
| MA 213 | Calculus III | <u>4</u> | PHY 232 | Gen University Physics | 4 |
| | | | PHY 242 | Gen Univ Physics Lab | <u>1</u> |
| | SEMESTER HOURS | 17 | | SEMESTER HOURS | 15 |

JUNIOR YEAR

| | | | | | |
|---------|----------------------------|-----------|--------|------------------------------|-----------|
| WRD 204 | Technical Writing** | 3 | CE 331 | Transportation Engr** | 3 |
| CE 303 | Intro to Construct Engrg** | 3 | CE 351 | Intro Environmental Egr | 3 |
| CE 341 | Fluid Mechanics | 4 | CE 382 | Structural Analysis | 3 |
| CE 381 | CE Materials** | 3 | | Engr Science Elective (1) | 3 |
| EES 220 | Physical Geology | 4 | | Math or Science Elective (2) | 3 |
| | | | UKCore | Humanities | <u>3</u> |
| | SEMESTER HOURS | 17 | | SEMESTER HOURS | 18 |

SENIOR YEAR

| | | | | | |
|---------|-------------------------|-----------|--------|-----------------------------|-----------|
| CE 461G | Water Resources Engr.** | 4 | CE 401 | Seminar** | 1 |
| CE 471G | Soil Mechanics** | 4 | CE 429 | CE Systems Design** | 3 |
| CE 48X | Struct Elective (3) | 3 | | CE Design Elective (4) | 3 |
| | CE Design Elective (4) | 3 | | Tech Elective (5) | 3 |
| UKCore | Citizenship US Elective | <u>3</u> | | Supportive Elective (6) | 3 |
| | | | UKCore | Citizenship Global Elective | <u>3</u> |
| | SEMESTER HOURS | 17 | | SEMESTER HOURS | 16 |

TOTAL NUMBER OF SEMESTER HOURS

131

** CE communication throughout the curriculum component

(1) Engineering Science Elective: ME 220 – Thermodynamics or EM 313 – Dynamics

(2) Math or Science Elective Options: MA 321, MA 322, MA 416G, MA 432G, BIO 208, CHE 230, CHE 236, EE 305, GEO 409G, EES 550, EES 585, MNG 551, or the other half of the Engineering Science Elective in (1).
NOTE: MA 322 is required for a math minor.

(3) CE 482 or CE 486G

- (4) Students are required to select two design electives from different areas. Chose from: CE 508, CE 531 or CE 533, CE 534, CE 549, CE 551, CE 579, CE 589. Design elective courses are typically taught once a year.
- (5) Technical Electives are to be chosen from any of the courses at the 300-level or above that carry a CE prefix and in which a student is qualified to enroll, exclusive of required courses. Engineering elective courses are typically taught once a year.
- (6) Supportive elective is to be chosen from any university course excluding more elementary versions of required courses, such as pre-calculus mathematics or PHY 211. **However**, each CE area has at least one recommendation for the supportive elective. Please review the Optional Concentration section in the Civil Engineering Undergraduate Handbook. The Supportive Elective can be taken P/F.

The sequence of courses listed above represents the curriculum leading to the degree of Bachelor of Science in Civil Engineering. The recommended scheduling will permit the degree requirements to be completed in four academic years providing the student has prepared properly in high school. Required preparation in mathematics, which is the key area, is included in the section, MATHEMATICS. That section also includes the recommendations and requirements for remedial work in mathematics. It is recommended that such students complete the remedial mathematics courses and preliminary engineering curriculum at a community college.

Many of the courses in the BSCE curriculum are required of all civil engineering undergraduates. Required courses are taught each fall and spring. However, a certain degree of flexibility is provided by the elective courses: UKCore electives, one structure's elective, one supportive elective, one technical elective, two technical design electives, one engineering science elective and one mathematics or science elective. Elective CE courses are typically offered once per year. Respective sections of this Handbook suggest possible student choices for these elective courses. Undergraduates may choose their electives to allow concentration in a particular civil engineering specialty. Such concentration generally begins during the second semester of the junior year. The section Optional Concentrations suggests appropriate elective courses for several concentrations.

Many of the courses in the curriculum are prerequisites for following courses; that is, they must be completed before subsequent courses may be taken. This is particularly true of the mathematics, physics, and engineering mechanics sequences. The normal, four-year curriculum was devised such that prerequisites will have been completed in advance of their need. Deviations from this curriculum may cause difficulty and perhaps delay graduation. Prerequisites for individual courses are included as part of the description of the course. A flow chart illustrates the necessary sequencing on the last page of this booklet.

The number of credit hours in the normal curriculum is 131. Under some circumstances, a student may be able to satisfy the BSCE course requirements with less than 131 credit hours, but a minimum of 128 credit hours of earned work is required since this is the minimum required for a bachelor's degree in Engineering.

Certain requirements in the following list are denoted not by a specific course designation and title, but rather by a general description such as UKCore. Such general descriptors are used where the specific course requirements vary depending on the student's prior preparation or achievement or where the student may elect alternate courses to satisfy a particular requirement (UKCore, structures, technical, technical design, and supportive electives). Other sections of this Handbook should be consulted to determine the specific requirements and elective possibilities for these parts of the program.

DEGREE REQUIREMENTS

To be awarded the degree of Bachelor of Science in Civil Engineering a student must satisfy all of the following requirements:

- complete the University and College requirements relating to writing and the UK Core,
- Complete the required civil engineering curriculum,
- Complete a minimum of 128 hours, exclusive of those earned in freshman college algebra and freshman college trigonometry, with a cumulative standing of not less than 2.0 on a 4.0 scale. This is a minimum requirement of the College of Engineering; additional credit hours usually are necessary to complete Civil Engineering degree requirements,
- Have a cumulative grade-point average of not less than 2.0,
- Complete all departmental courses and technical electives with a cumulative standing of 2.0 or higher,

- Be accepted into “Engineering Standing” division of the civil engineering program for at least the final semester,
- Earned a grade of "C" or better in each CE prefix course, except that a maximum of one "D" is permitted in a CE prefix course numbered 400 or 500,
- Earned a “C” or better in EM 221 and EM 302, and
- Have no delinquent financial obligations to the University.

No more than half of the credit toward an undergraduate degree may be earned by any combination of special examinations, Advanced Placement Examinations, CLEP examinations, and correspondence courses. A minimum of 30 of the last 36 credits presented for the degree must be taken from the University, but not necessarily on the Lexington campus. Students must have the prior approval of the Department Chair and the College Dean if they wish to satisfy some of the 30 credit hour requirements through special examination or correspondence courses.

Degrees are awarded three times a year - in August, December, and May. Students are required to file a formal “Application for Degree” online through the [myUK portal](#) by **November 30** for degrees to be awarded the following **May**, by **February 28** for degrees to be awarded the following **August**, and by **June 30** for degrees to be awarded the following **December**. Students who apply late, or who fail to apply at all, may not graduate at the expected time. See the Student Records Office in RGAN 375 for questions.

DUAL DEGREE PROGRAMS

Students who have earned, or are working toward, degrees in other disciplines and wish to earn a degree in civil engineering, should refer to the Handbook section entitled SECOND BACCALAUREATE DEGREE.

EMPLOYMENT

The University, local consulting engineers, public agencies, or others employ many engineering undergraduates on a part-time basis during the academic year. **WARNING:** A University of Maryland (College Park) study of working engineering students shows that students who work while going to a major university in engineering should limit their course loads as given in the table below.

| Work Hours | University Credit Hours |
|------------|-------------------------|
| 0 – 3 | 16 – 19 |
| 4 – 10 | 12 – 15 |
| 10 – 20 | 9 – 12 |
| 20 – 30 | 6 – 9 |
| 30 – 40 | 3 – 6 |

Although the Department does not maintain an employment referral service, students seeking part-time work may obtain information on outside work from:

- The bulletin board located immediately outside the Department Office on which notices of part-time job opportunities are posted,
- Faculty advisors,
- Engineering course instructors,
- Engineering Student Services,
- Fellow students,
- Local engineering consultants and governmental agencies employing engineering aides,
- Financial Aid Office, 131 Funkhouser Building, and
- Classified advertisements in the local newspaper.

The College also operates a voluntary Cooperative Education Program in which the student works for a participating company, rotating work periods and study periods (see COOPERATIVE EDUCATION PROGRAM for

further details).

Students will find the College of Engineering Career Services most helpful (see CAREER SERVICES for further details).

ENGINEERING COLLEGE PROBATION, ACADEMIC SUSPENSION, AND REINSTATEMENT

Probation and Academic Suspension Rules

The College of Engineering rules on academic suspension, probation and reinstatement are more stringent than the University rules. Students are monitored by the Dean's office to ensure that Engineering students meet the following minimal requirements:

1. Any engineering student who has completed two or more semesters at UK and who fails to maintain a cumulative UK GPA of 2.0 or higher will be suspended from the College of Engineering and will not be readmitted until this GPA is 2.0 or higher.
2. Any student enrolled in the College of Engineering who earns a UK GPA of less than 2.0 in any semester will be placed on academic probation.
3. Any student on academic probation who fails to earn a 2.0 or higher semester GPA will be suspended from the College of Engineering and will not be readmitted until he or she has obtained a semester GPA of 2.0 or higher for one semester and the student's cumulative UK GPA is 2.0 or higher.
4. Students who are suspended twice from the College of Engineering will not be readmitted.

Reinstatement Rules:

1. A student who has been academically suspended from the College will not be reinstated into the College of Engineering before raising the cumulative UK GPA to at least a 2.000. During suspension a student may continue in a different college of the University and can take those engineering courses not requiring registration in the College of Engineering or Engineering Standing as a prerequisite. A reinstated student who has been academically suspended shall be placed on scholastic probation and be subject to final academic suspension from the College according to the reinstatement rules found in "Student Rights and Responsibilities".
2. The dean may use discretion in applying these rules where a particular case justifies less severe action.
3. In addition, see the Handbook or Bulletin section on ACADEMIC BANKRUPTCY.

ENGLISH

(University Writing and Communication Requirement)

The university writing requirements must henceforth be fulfilled via:

(1) Successfully completing WRD110/WRD111, two 3-credit courses with a C or better unless you satisfy the one or more of the conditions listed in (2) below. Full-time students must enroll in WRD110 in either fall or spring of their first-year. They may drop the course during the first year, but completion of the first-tier requirement is a prerequisite for entry in all second-tier writing courses. Following the third semester, students must enroll in WRD110 each semester until they have satisfied the first-tier Writing Requirement.

(2) Students who have a standard score of 32 or above on the English section of the ACT, 700 or above on the SAT, or 4-5 on the AP **English Language** exam will receive exemption from WRD110. There is no exemption by CLEP. Scores of 3-5 on the AP **English Literature** exam or the equivalent on the IB exam will continue to receive 3 units of credit for ENG 161, which does not satisfy either condition of the University Writing Requirement. **Note:** Students in the Honors Program will continue to satisfy the entire University Writing Requirement through that curriculum.

(3) **Graduation Composition and Communication Requirement** establishes the minimum criteria for University of Kentucky undergraduate degrees. Individual majors may have additional communication requirements. To complete the Graduation Composition and Communication Requirement, students must:

- Complete the First Year Writing Requirement (item 1 above);
- Attain sophomore status (30+ hours); and
- Complete an approved course or series of courses in the major. For Civil Engineering, WRD204 is the only approved course.

ENVIRONMENTAL ENGINEERING CERTIFICATE PROGRAM

Everything Civil Engineers do modifies the environment. However, the College of Engineering supports an environmental option in engineering certificate program. The purpose of the environmental option in engineering certificate program is to provide increased state and university wide visibility of an existing and growing focus on environmental education within the college of engineering and to provide students with a formalized recognition of an emphasis in environmental issues as part of their undergraduate degree program. The program will provide students with both proactive (impact prevention) and reactive (impact mitigation) perspectives on environmental issues.

To receive an environmental option in engineering certificate at the undergraduate level, the student is required to obtain an undergraduate degree in a participating department of the college of engineering and must have a minimum cumulative GPA of 2.5. To receive an environmental option in engineering certificate at the undergraduate level, the student would be required to obtain an undergraduate degree in a participating department of the college of engineering, earn a C or better in each course used to satisfy the certificate requirements and take (as part of the normal degree program):

- A. A three-hour interdisciplinary introductory course in environmental engineering (automatically satisfied in civil engineering with the required CE 351 course, see CURRICULUM).
- B. A minimum of six hours of environmental science courses with at least three hours of biology and three hours of chemistry selected from the following (Civil Engineering recommends CE 555 and CHE 236):
 - 1) BIO 208 Principles of Microbiology or CE 555 Microbial Aspects of Environmental Engineering
 - 2) CHE 230 Organic Chemistry I or CHE 236 Survey of Organic Chemistry¹.
- C. At least 12 hours of approved environmentally related engineering courses with the requirement that at least three hours must be selected from one participating department outside the major.

| | | |
|-------------------|----------|--|
| Approved Courses: | BAE 402 | Dynamics of Biological Systems |
| | BAE 435G | Waste Management for Biosystems |
| | BAE 438G | Fundamentals of Groundwater Hydrology (same as CE 460) |
| | BAE 555 | Solid Waste Facility Design |
| | BAE 599 | Environmental Topics in Agricultural Engineering |
| | CE 461G | Water Resources Engineering (required undergraduate CE course) |
| | CE 551 | Water and Wastewater Treatment |
| | CE 555 | Microbial Aspects of Environmental Engineering |
| | CME 515 | Air Pollution Control |
| | CME 580 | Design of Rate and Equilibrium Processes for Water Pollution |
| | CME 599 | Environmental Topics in Chemical Engineering |
| | MNG 341 | Mine Ventilation |
| | MNG 463 | Surface Mining Operations |
| | MNG 490G | Explosives and Blasting Engineering |
| | MNG 599 | Environmental Topics in Mining Engineering |

For additional information on the certificate program, contact Professor Kelly Pennel at (859) 218-2540 or email kellypennell@uky.edu.

EARTH AND ENVIRONMENTAL SCIENCE

EES 220 – Principles of Physical Geology is a required course in the Civil Engineering Curriculum. Earth and Environmental Science courses which may be accepted for transfer credit are those which typically are required of engineering, geology, or physical science majors and which include the equivalent of three semester credit hours of lecture and one credit hour of laboratory.

Earth and Environmental Science courses that may be used as a supportive elective are sophomore or higher-level courses in historical geology, mineralogy, mineral resources, environmental geology, sedimentation, petrology, and geophysical exploration.

¹Either one of these can be taken as a science elective.

FEE PAYMENT

Check the appropriate semester Schedule of Classes under “Fee Payment Instruction” to determine the deadline dates for submitting payment of Tuition and Fees. Tuition refunds for students who officially withdraw through the Registrar’s Office, or who change their status from full-time to part-time, or further reduce their part-time status through Add/Drop will be made according to a schedule that may be found in the University Bulletin or in the official Schedule of Classes.

Questions concerning fee payment procedures may be directed to the Ombudsman for Business Affairs, (859) 257-1841. Questions concerning tuition refunds may be directed to the Registrar's Office, (859) 257-3406.

FINAL EXAMINATIONS

If a final examination is to be given for a course offered during a regular term, University regulations require that it be administered during the examination period at the time scheduled by the Registrar. During the intercession and summer school, final examinations, where appropriate, will be administered during the last class day.

During the last week of classes of a regular semester, or during the three day period prior to the last day of class of intercession or summer school, no examination may be given except for laboratory practical or “make-up” examinations. In cases of “Take Home” final examinations, students shall not be required to return the completed examination before the regularly scheduled examination period.

Students with more than two final examinations scheduled on the same day are entitled to have the examination for the class with the highest catalog number rescheduled. In case this highest number is shared by more than one course, the one whose departmental prefix is first alphabetically will be rescheduled. **The option to reschedule an exam must be exercised in writing to the appropriate instructor two weeks prior to the last class meeting.**

In the case of conflicts or undue hardship for an individual instructor, a final examination may be rescheduled upon the recommendation of the chair of the department and with the concurrence of the dean of the college and the Registrar.

If rescheduling of an examination creates an examination schedule conflict, the student shall be entitled to take the rescheduled examination at another time during the examination period by mutual agreement with the instructor.

In the case of undue hardship for an individual student the instructor can reschedule the final exam.

FINANCIAL AID

Various scholarships, financial aid, and work-study programs are available to students attending the University. The Financial Aid Office, 128 Funkhouser Bldg., (859) 257-3172 should be contacted for information on: part-time employment, university-wide scholarships, work-study opportunities, Educational Opportunity Grants, Student loans, Honor loans, short-term emergency loans, National Defense Student Loans, Health Professions loans and scholarship, and the Federally Insured Loan Program. (<http://www.uky.edu/financialaid/>)

The College of Engineering administers a number of loans and scholarships that are available to qualified undergraduates. Information on loans may be obtained from the Dean's office, 369 Ralph G. Anderson (RGAN) Building, or call (859) 257-0569. Also, check out the college of engineering web site: <https://www.engr.uky.edu/scholarships/>

The Department administers Transportation and other scholarships. Information regarding these is available from the Department Office. See also the sections on AWARDS and SCHOLARSHIPS. Students seeking part-time employment should also see the section on EMPLOYMENT.

FINANCIAL DELINQUENCY

The University expects all students to be financially responsible and not to be delinquent in their financial obligations to the University or to any department or division thereof, including room and board payments to sanctioned fraternal student organizations. Such obligations shall not include fines and penalties assessed against a student by other than University offices and departments.

Financial obligations that are not met within 10 days after the date due shall be reported in writing to the proper office. Obligations to any division or department shall be reported to the office designated by the Provost.

The appropriate business office notifies the student of the financial obligation. Students who do not settle

their obligation by the date designated on the notice will be considered delinquent and reported to the Registrar, subject to regulations promulgated by the Provost.

After the Registrar has been notified that a student is delinquent, the student will not be allowed to register or to transfer credits, nor awarded the graduation diploma. This will remain in effect until written notification is received from the appropriate business office that the obligation has been settled.

FRESHMAN ADMISSION TO THE COLLEGE OF ENGINEERING

Students wanting admission into the College of Engineering must meet one of the following requirements:

- ACT Math score of 23 or higher or SAT math score equivalent; or
- 3 or above on the Calculus AB portion of the Advanced Placement Exam; or
- Eligible for MA 110 enrollment based on result of the UK Math Department Placement Exam; or
- Completion of MA 110 – Analytic Geometry and Trigonometry or equivalent with a grade of C or higher; or
- Completion of MA 109 – College Algebra and MA 112 – Trigonometry or equivalents with a C or higher in each course.

Newly admitted pre-engineering or pre-computer science students are allowed to choose an open major for one semester (12 credit minimum) called General Engineering. All students must select a program before the end of their first semester, preferably when they register for classes for their second semester.

Application must be made for admission to a specific pre-engineering program. However, subsequent transfer between programs will be permitted and may be accomplished by applying and satisfying the appropriate specified criteria.

All undergraduate degree programs are divided into pre-engineering and engineering. Pre-engineering is broadly defined as the first three semesters of a program, while engineering is broadly defined as the last two and half years of the program. Every student must be admitted to engineering standing in a specific program prior to graduation.

Students may also consider taking preparatory coursework at many of the other colleges and universities offering math and science courses in Kentucky prior to seeking admission to the College of Engineering. Transfer students who have completed the freshmen courses should apply directly to their department of choice.

Any student with questions regarding admission to the College of Engineering at UK can get input by contacting the Director of Student Services at 859-257-7978 or the Associate Dean for Administration and Academic Affairs at 859-257-8827.

FUNDAMENTALS OF ENGINEERING EXAMINATION

The Fundamentals of Engineering (FE) Examination is the first of two exams that are taken by engineers who plan to become licensed professional engineers. It is best to take the FE during your senior year and you **should have completed all required courses in the civil engineering curriculum, especially the Structures Elective course since it covers structural design**. The second exam is taken after the engineer intern has accumulated four or more years of engineering experience, three or more years for graduates with a Master of Science in Civil Engineering degree in Kentucky. A full co-op rotation of three terms will provide a one-half year reduction in the practical experience requirement, but a maximum of one year is permitted in Kentucky. Some states do not permit any reduction, e.g., Indiana. Additional information is available on the Kentucky Board of Licensure web site – <http://www.kyboels.ky.gov>.

Currently The Fundamentals of Engineering Examination are given via computer-based testing. The exam is given during assigned windows of time at approved testing sites. The length of the exam is 6 hours, with specific focus on the discipline. Students are referred to the National Council of Examiners for Engineering and Surveying webpage for specifics about the topics covered on the FE exam. http://www.ncees.org/Exams/FE_exam.php

FUNDAMENTALS OF SURVEYING EXAMINATION

The Fundamentals of Surveying (FS) Examination is the first of two exams taken by engineers who plan to become licensed professional land surveyors. You can take the exam after **completing a minimum of 105 hours of the civil engineering curriculum in which 12 hours of surveying related course material must be included (see below)**. You take the second exam after completing four or more years of surveying experience. Additional information is available on the Kentucky Board of Licensure web site – <http://www.kyboels.ky.gov>.

The Fundamentals of Surveying exam application requires completion of a minimum of 105 semester credit hours as well as 12 hours of the surveying core curriculum in at least three of the following subject areas: Principles of Surveying, Professional Ethics and Conduct, Computer Graphics related to land surveying, Geographic Information Systems, Route Surveying, Land Boundary Location, and Boundary Law. The following Table summarizes the number of credit hours for each course related to the course areas of the 12-hour surveying education component in an engineering program. CE 211, 401 and 106 are all required courses in the civil engineering curriculum. Thus, a minimum of 8 of the 12 required surveying core credit hours are included in the required civil engineering curriculum. A student only needs to complete an additional four credit hours to meet the minimum requirements for the Fundamentals of Surveying (FS) exam. Obviously, this is achievable provided a student takes any two of GEO 409G, CE 517, and CE 531. The distribution of courses ensures that the students will meet a minimum of five of the six areas, which is well in excess of the minimum three areas.

| Surveying Category | CE Course | Surveying Credit Hours |
|---|-------------------|------------------------|
| Principles of Surveying | CE 211 | 3 |
| Professional Ethics and Conduct | CE 401 | 1 |
| Computer Graphics | CE 106 | 3 |
| Geographic Information Systems | GEO409G or CE 525 | 3 |
| Route Surveying | CE 211, CE 531 | 1, 1 |
| Land Boundary Location and Boundary Law | CE 517 | 3 |

Both the FE and FS exams are given via computer-based testing. The exam is be given during assigned windows of time at approved testing sites. Students are referred to the National Council of Examiners for Engineering and Surveying webpage for specifics about the topics covered on the FS exam. http://www.ncees.org/Exams/FS_exam.php.

Further information and application forms are available from the Kentucky State Board of Licensure for Professional Engineers and Land Surveyors, 160 Democrat Drive, Frankfort, Kentucky 40601 (502/564-2680); <http://www.kyboels.ky.gov>.

GENERAL EDUCATION TRANSFER AGREEMENT (GETA)

The Kentucky Council on Post-Secondary Education has adopted a policy for the transfer of general education credits at public colleges and universities in the Commonwealth. The policy is designed to promote the acceptability of general education credits from one school to the other. Any student transferring from a public university or college in the Commonwealth of Kentucky that has been general education certified for that institution will also fulfill the requirements at UK. All others must follow the requirements for the Civil Engineering degree program as listed in the CURRICULUM LEADING TO THE DEGREE OF A BACHELOR OF SCIENCE IN CIVIL ENGINEERING.

GOALS OF THE DEPARTMENT

The primary goal of the Department is to maintain a center of excellence with a balance in the knowledge, techniques, and practices of civil engineering (including all the major specialties thereof) for the purposes of:

- Preparing individuals to become professional practitioners of civil engineering;
- Advancing the professional competence of civil engineers to higher levels by means of graduate education;
- Enabling practicing civil engineers to keep abreast of current developments by means of continuing education;
- Conducting research for the advancement of knowledge in the professions and in support of the educational programs;
- Encouraging the implementation of significant research findings;
- Serving the University, the local community, the Commonwealth of Kentucky, and the nation through professional activities;
- Promoting and advancing the professions of civil engineering; and

- Seeking to assure that the profession of civil engineering is always responsive to the needs, desires, and aspirations of mankind.

Degree programs offered through the Department of Civil Engineering include: BSCE, MSCE and Ph.D. These programs are structured to be mutually supportive and to complement other activities in achieving departmental goals.

The objective of the Bachelor of Science in Civil Engineering (BSCE) degree program is to prepare each student to become a productive member of the profession. The curriculum provides a solid foundation in the fundamental principles of civil engineering theory/design. **However**, additional education is recommended. The model licensure law that will be in effect on January 1, 2020 requires a bachelor's plus 30 additional relevant credit hours (essentially a master of science in engineering degree) or 150 credit hours, 30 of which must be higher-level engineering courses.

Completing the BSCE degree plus the additional higher-level civil engineering courses is the first step toward becoming a professional engineer. Becoming a Licensed Professional Engineer requires additional experience in practice.

To the graduate engineer, the Master of Science in Civil Engineering (MSCE) degree programs offer opportunities for advanced graduate education. This additional year of study can be important to the student's future professional development. Not only will it provide a broadened foundation in one of the civil engineering specialties, it will permit all individuals to develop their creative and communication skills, and the ability to participate effectively in making engineering decisions. In most cases, the graduate students will work closely with one or more of the faculty, and this will give them greater insight into practices and procedures of engineering research and design. A year spent in graduate study will be credited as one year of experience toward the professional licensure requirement. Furthermore, a maximum of 12 additional hours is required to earn a Master of Science degree above the 150-hour minimum of the model licensure law.

The Department also offers a program leading to the degree of Doctor of Philosophy (Ph.D.). This program offers an opportunity for extensive advanced learning and specialization. The program is intended to prepare engineers to enter careers in creative design, engineering consultation, basic and applied research, and teaching at the university level.

Senior students who are qualified to participate in the graduate programs are encouraged to discuss their plans with the Director of Graduate Studies and their advisor or faculty mentor.

GRADE CHANGES

A faculty member may change a grade after it has been reported to the Registrar only in case of an arithmetic error or if the initial award was an I-grade. The instructor may also recommend to the Department Chair that a grade be changed for any reason other than an arithmetic error, and the grade will be changed if the Department Chair approves. There shall be only one grade change per student per course. No grade may be changed after the student has graduated from the University except in the case of the arithmetic error provided for above.

GRADE-POINT AVERAGE

The following definitions are useful:

- The number of credit hours attempted is the total of the credit hours for all courses taken for which grades of A, B, C, D, or E were awarded or +/- for colleges using such a grading system. Courses for which grades of CR, F, I, P, S, or W were awarded are not included.
- The number of credit hours earned is the total of the credit hours for all courses taken for which grades of A, B, C, D, P, or CR were awarded or +/- for colleges using such a grading system. Courses for which grades of E, F, I, S, or W were awarded have no effect on the number of credit hours earned.
- Quality points are earned for each course completed with a grade of A, B, C, and D on the basis of 4, 3, 2, and 1 quality points per credit hour, respectively. The number of quality points earned is the total of the quality points for all courses taken for which grades of A, B, C, D were awarded.

The grade-point average is the ratio of the total number of quality points earned to the total number of quality credit hours attempted. If a course has been repeated under the formal repeat options (see REPEAT OPTION), only the credit hours and quality points for the second completion are used in computing the student's grade-point average. If a course is repeated to improve a grade, but not under the repeat option, the credit hours and quality

points for each completion are used in computing the grade-point average.

Rules pertaining to academic probation and suspension are based on grade point average. The section ENGINEERING COLLEGE ACADEMIC PROBATION AND SUSPENSION should be consulted for the rules of the College with respect to probation.

Refer to ACADEMIC BANKRUPTCY, for special provisions pertaining to students who are readmitted to the University after an interruption of two or more years. See TRANSFER COURSE ACCEPTABILITY, for rules governing the transferability of credit hours attempted, credit hours earned, and quality points earned from other institutions.

GRADES

The general grading system uses a series of letters, to which are assigned grade-point values. The system is based neither on an absolute numerical system nor on a distribution curve, but on the following descriptions:

Grade A Represents an exceptionally high achievement as a result of aptitude, effort and intellectual initiative. It is valued at four (4) grade points for each credit hour.

Grade B Represents a high achievement as a result of ability and effort. It is valued at three (3) grade points for each credit hour.

Grade C represents satisfactory achievement for undergraduates; represents unsatisfactory achievement for graduate students and is the minimum passing grade for which credit is conferred. It is valued at two (2) grade points for each credit hour.

Grade D represents unsatisfactory achievement for undergraduates and is the minimum grade for which credit is conferred; the grade is not to be used for graduate students. It is valued at one (1) grade point for each credit hour. **A Civil Engineering major can only earn one D in a 400 or 500 level CE prefixed course that counts toward satisfying degree requirements, except for the supportive elective.**

Grade E represents unsatisfactory performance and failure in the course. It is valued at zero (0) quality points and zero (0) credit hours. A student receiving this grade can obtain credit in the course only by repeating the entire work of the course in class, or by special examination in accordance with the procedures outlined under Special Examinations. In rare cases in which undue hardship is involved in repeating the work in class, the dean of the college in which the student is enrolled may approve repeating the work by correspondence. A special provision for repeating a course, in which an unacceptable grade has been earned, is described in REPEAT OPTION.

Grade F Represents failure in a course taken on a Pass-Fail basis. It is valued at zero (0) grade points and zero (0) credit hours.

Grade I means that part of the regularly assigned work of the course remains undone. It shall be conferred only when there is a reasonable possibility that the student can complete the work within the allowable period of time for removal of an I grade and that a passing grade will result from completion of the work. Except under exceptional circumstances, the student shall initiate the request for the I grade. An I grade shall not be conferred when the student's reason for incompleteness is unsatisfactory to the Instructor of Record.

A grade of I must be replaced by a regular final letter grade not later than 12 months from the end of the academic term in which the I grade was awarded or prior to the student's graduation, whichever occurs first. The Registrar's Office shall notify the Instructor of Record at least two months prior to expiration of the allowable period. The Instructor of Record can extend the allowable period for up to an additional 12 months by completing a grade assignment form. If the Instructor of Record is not available, the department chair or dean of the college in which the course is offered may complete a grade assignment form to extend the allowable period for up to 12 months. In the event the grade of I is not replaced by a regular final letter grade within the allowable period, the Registrar shall change the I grade to a grade of E on the student's permanent academic record and adjust the student's GPA accordingly. In the event that an I becomes an E, the Instructor of Record may submit a grade assignment form to replace the E within 12 months from the time the E was assigned. A graduate who had an I grade on his or her academic record at the time of graduation (and which grade was subsequently changed to an E by the Registrar) may be allowed a maximum of 12 months following the end of the semester, term or session in which the course was taken to satisfactorily complete the course and receive a grade change. Each department is responsible for recording information for each incomplete, specifying:

- a. the student name and student number;
- b. the course and section number, hours of credit, semester, year, Instructor of Record;

- c. the work to be completed and basis for grading;
- d. the time frame for completing the incomplete (not exceeding 12 months); and
- e. documentation that the student has been advised of the conditions for removing the incomplete.

This information shall be filed with the department chair or chair's designee. It is preferable that the information be signed and dated both by the student and the Instructor of Record. A standard form is available at the University Senate Web site, but each department is welcome to create its own form and scheme for recording this information.

The Instructor of Record shall provide a completed copy of this record to the student and the department chair at the time the I grade is reported.

Grade IP represents satisfactory work in progress in courses carrying no academic credit. It is valued at zero (0) quality points and zero (0) credit hours. The grade IP may be recorded for students in zero-credit courses of research, independent work, or seminar-type, if at the end of a semester the student, because of the nature or size of the project, has been unable to complete the course. The project must be substantially continuous in its progress. When the work is completed, a final grade will be substituted for the IP. This grade may not be conferred to a student who has done unsatisfactory work or to one who has failed to do a reasonable amount of work.

Grade N represents a temporary grade to be submitted for students who have been entered by the Registrar into official class rolls, but have never attended class and who have not officially withdrawn. The Registrar shall remove their names from the official class roll and the student's enrollment in the class shall not be recorded in the student's official academic record. (As a temporary mark, "N" carries no credit hours or grade points).

Grade P Represents a passing grade in a course taken on a Pass-Fail basis. It may also be assigned by the University Appeals Board in cases involving a violation of student academic rights. Credit hours successfully completed under this grade will count towards graduation but will not be used in calculating grade point averages. (US: 9/20/93) (Also see PASS-FAIL)

Grade S represents a final grade in courses carrying no academic credit or in courses used for residency credit or dissertation/thesis credit. It is valued at zero (0) quality points.

Grade SI represents an interim grade in credit-bearing seminars, independent work courses, or research courses if these courses extend beyond the normal limits of a semester or summer term. This grade signifies that both the quality and quantity of the student's academic work were satisfactory during the applicable term. All **SI** grades must be replaced by a regular final letter grade prior to the Qualifying Examination or Final Examination for doctoral students or prior to graduation in all other cases. As a temporary mark, **SI** carries no credit hours or quality points.

Grade UI represents an interim grade in credit-bearing seminars, independent work courses, or research courses if these courses extend beyond the normal limits of a semester or summer term. This grade signifies that the quality or the quantity of the student's academic work was unsatisfactory during the applicable term. All **UI** grades must be replaced by a regular final letter grade prior to the Qualifying Examination or Final Examination for doctoral students or prior to graduation in all other cases. As a temporary mark, **UI** carries no credit hours or quality points.

Grade UN represents a final grade in courses carrying no academic credit, in graduate residence courses, or as an interim grade in specific types of courses for which a student has done unsatisfactory work or has failed to do a reasonable amount of work. It is valued at zero (0) quality points and zero (0) credit hours.

Grade XE represents failure in a course due to an academic offense. It is valued at zero (0) quality points and zero (0) credit hours. The repeat option may not be exercised for any course in which the grade of **XE** was received. A grade of **XE** normally may not be changed to a **W** by retroactive withdrawal, except upon appeal to the University Appeals Board as prescribed by University Senate Rules.

Grade XF represents failure in a course taken on a Pass/Fail basis due to an academic offense. It is valued at zero (0) quality points and zero (0) credit hours. The repeat option may not be exercised for any course in which the grade of **XF** was received. A grade of **XF** may not be changed to a **W** by retroactive withdrawal, except upon appeal to the University Appeals Board as prescribed by University Senate Rules.

Grade W denotes withdrawal from class. It may be assigned by the University Appeals Board in cases involving a violation of student academic rights. It is valued at zero (0) quality points and zero (0) credit hours. (see WITH-

DRAWAL FROM A COURSE for more information).

Grade X Reenrollment recommended (developmental courses only). It has no value in computing grade point average.

Grade Z The grade Z means that the student has made significant progress but needs and deserves more time to achieve a passing level. The student should reenroll in the course in order to continue advancement to a level of competence set for the course. Re-enroll grades may be assigned only for development courses numbered 000-099. It has no value in computing grade point average.

Grade AU Represents a completion of a course attended on an audit basis. It is valued at zero (0) grade points and zero (0) credit hours.

Grade CR is a grade assigned to AP or CLEP scores or bypass work to reflect that credit is granted for a course. Credit hours will count towards graduation but will not be used in calculating grade-point averages.

GRADUATE SCHOOL PREPARATION

All students in engineering should begin early in their academic careers to consider whether it would be to their advantage to continue their education beyond the bachelor's degree level. Students in one of the departmental graduate programs can concentrate on one of the major areas of civil engineering. Through a combination of advanced course work and participation in research or independent work, they can prepare to become specialists in that part of the profession in which they plan to make their careers.

Each applicant seeking admission to The Graduate School as a degree student in civil engineering normally must hold a corresponding baccalaureate degree and have an undergraduate grade-point average of at least 2.8 on a 4.0 scale. To avoid difficulty with the admissions process, all application materials must be submitted by the required deadline. These materials include: completed application form (available from the Civil Engineering Office or The Graduate School, Room 351, Patterson Office Tower), official scores on the verbal, analytical, and quantitative aptitude portions of the Graduate Record Examination (GRE), and two copies of the official transcripts of all prior university work. Applications to take the GRE and information regarding it are available from the Graduate School and the exam is a computer-based exam.

No work taken while the student is in an undergraduate status may be used to satisfy a graduate degree requirement. However, a senior lacking no more than six credit hours for graduation may be admitted to the Graduate School during the last undergraduate semester provided they have an undergraduate grade-point standing of at least 2.8 on all work attempted. Such students can take additional courses that can be counted toward a graduate degree. The total load of such a student may not exceed 12 credit hours. Graduate credit will be allowed for each credit hour of graduate work beyond the six or fewer credit hours needed to complete undergraduate requirements. Requirements for the undergraduate degree must be completed during the semester in which the student is allowed to register for part-time graduate work. Students applying for admission to The Graduate School under these conditions must follow the normal Graduate School admissions process (including submission of GRE scores). Additionally, they must have a special petition form (available from Graduate School, 351 Patterson Office Tower) approved by the Director of Graduate Studies; the Associate Dean for Undergraduate Studies of the College; and the Dean of The Graduate School. This form must list the course or courses to be taken to complete the undergraduate requirements. Students who are accepted into The Graduate School before completing their undergraduate programs will register as new graduate students, and not as continuing undergraduate students. See also UNIVERSITY SCHOLARS PROGRAM IN CIVIL ENGINEERING.

HONORS PROGRAM

The Honors Program at the University of Kentucky will provide opportunities for students to take challenging classes in many disciplines across the diversity of colleges at UK. While students will take Honors courses, the real benefit to being in Honors is the opportunity for a range of experiential learning. Students will be expected to participate in two Honors Experiences, which may take the form of Education Abroad, Research and Scholarship projects, Community Service, or other approved activities. See the Honors program webpage for more details (<http://www.uky.edu/academy/honors>).

THE HONORS CURRICULUM: An Honors education at UK opens up an exciting world of inquiry, including research, education abroad, and service that will challenge students intellectually, provide access to the most creative minds at UK, and prepare participants for advanced study and to make a difference in the world upon graduation. The Honors curriculum requires Honors coursework in UKCore Inquiry, participation in at least two for-credit Honors

Experiences, a Senior Capstone, and a choice of coursework campus-wide to fulfill the educational goals of the Honors student. There are Honors Course expectations across the academic career of the student, opportunities for residential experiences in Honors Living Learning Communities, particularly during the first two years, academic flexibility, and enhanced advising an co-curricular opportunities.

PROGRAM REQUIREMENTS

The Honors Program requires completion of 15 credit hours of Honors Courses and 6 credit hours of Honors Experiences for a total of 21 credit hours. Additionally, Honors students complete CIS/WRD 112 “Accelerated Composition and Communication” to satisfy Composition and Communication I and II of the UK Core requirements.

1. 6 credit hours of Honors Courses chosen from (Freshman year course options):
 - HON 151, 152, 251, 252 (may be taken during student’s first year only)
 - Honors-designated sections of department courses
2. CIS/WRD 112 “Accelerated Composition and Communication”
 - Students satisfying Composition and Communication I & II with transfer courses or through alternative means will not be required to complete CIS/WRD 112. Students with transfer courses satisfying only part of Composition and Communication I and II have the option to complete the remaining courses needed at UK or through CIS/WRD 112.
3. 6 credit hours of Honors Courses chosen from (Sophomore/Junior year course options):

Any combination of the following options or two of the same option is acceptable:

 - HON 301
 - Honors-designated sections of department courses
 - Convert a non-Honors course for Honors credit using the Honors Course Conversion process
 - Graduate courses numbered 500-level and above or 400-level courses with G suffix (course syllabus required along with student/professor agreement to complete graduate-level course requirements)
4. 6 credit hours of Honors Experiences chosen from:
 - Education Abroad (HON 352 or other approved course)
 - Research (any 395 or 495 course or other approved course)
 - Experiential Learning (any 396, 397, 398, 399, 497, 498, 499 or other approved course)
 - Service Learning (any credit-bearing service learning course – notify your advisor when registering)
5. 3 credit hours (Senior Year):
 - Honors Senior Capstone – HON 398 or approved course (may be completed through coursework in student’s major)
6. Honors students must maintain a 3.00 GPA
Probationary status will be granted to Honors students falling below this threshold who can reasonably be expected to raise their GPA back to a 3.00 prior to graduation. Students who have not removed themselves from probationary status after two semesters will be required to leave the program.

INDEPENDENT WORK

Independent Work in Civil Engineering (CE 195 or CE 395 or CE 595) is a course available for students whose interests go beyond those topics that are covered in the regular curriculum or for make-up work in pre-civil engineering courses (CE 195, 0 to 4 credit hours). From one to six credit hours can be earned in CE 395 or CE 595 to help complete the technical and supportive elective requirements or, if the nature of the work is suitable, the design elective requirement.

The types of activity used for CE 395 or CE 595 must be of the nature to satisfy a technical elective requirement within Civil Engineering. Typical examples include preparation and documentation of computer programs; conduct and documentation of a laboratory research effort; preparation of technical, state-of-the-art literature surveys; engineering design projects; and special individualized study programs. The following guidelines are used to judge the suitability of a proposed project:

- It must represent an independent, problem-oriented individual activity. The time devoted by a student to such study cannot be less than that for a regular course of equivalent credit.
- A civil engineering faculty member must supervise the work. If the work is performed off campus, the student must consult the faculty supervisor(s) on a regular basis and keep faculty member(s) informed of progress.
- The work must not have been performed prior to enrollment in the course. Any work completed prior to the approval of the study cannot be submitted for credit.

Students interested in undertaking an independent work project should follow the procedure given below:

- Students should consult with their advisors and other members of the faculty to ascertain the nature of an acceptable activity that is in harmony with their own self-interest and sense of what is important.
- Each student must identify a faculty supervisor of the desired project and obtain the supervisor's consent to act in that capacity.
- The student must then obtain approval from the Director of Undergraduate Studies to take the desired number of credits of CE 395 or CE 595 by completing and filing a "Course Initiation Form", available in the Department Office. There shall be a clear description of the learning outcomes and course evaluation criteria.
- If approved, the faculty supervisor and the Director of Undergraduate Studies will sign the form and return it to the student.
- The student should then register in the normal manner to take the course.

INFORMATION SOURCES

The University of Kentucky Bulletin is published annually. It is the official catalogue of the University of Kentucky and contains both general and specific information for undergraduates including academic opportunities, academic policies, descriptions of all credit courses offered by the University, a calendar, admission requirements, fees, living accommodations, financial aid, libraries, student services and activities, and cultural opportunities. The Bulletin is distributed to all newly admitted undergraduates during the Advising Conference and is available for purchase through the University Bookstore in the Student Center. The Bulletin is also available online (<http://www.uky.edu/registrar/bulletin-course-catalog>)

Student Rights and Responsibilities is a legalistic document that includes the "Code of Student Conduct: Rules, Procedures, Rights and Responsibilities Governing Non-Academic Relationships" and "Selected Rules of the University Senate Governing Academic Relationships." Copies are available from the Dean of Students, Room 513, Patterson Office Tower. (<http://www.uky.edu/deanofstudents/>)

INSTITUTE OF TRANSPORTATION ENGINEERS STUDENT CHAPTER (Professor Nick Stamatiadis, Faculty Advisor)

The University of Kentucky Student Chapter of the Institute of Transport Engineers (UK-ITE) was organized in 1965, authorized by ITE National headquarters in 1969, and was chartered in 1974. Members usually belong also to the UK Student Chapter of ASCE and typically hold membership in both organizations.

UK-ITE members automatically become international ITE members, receive the national ITE Journal, and participate in such transportation related activities as:

- Visits with practicing traffic and transportation engineers at city, state, and national levels for review of current research, design, maintenance and operations activities;
- Talks on campus by practicing engineers concerning career guidance, problems, and prospects for young engineers in the transportation milieu;
- College of Engineering open house, group and individual projects and presentations; and
- Special studies aimed at familiarization with current traffic and transportation activities such as traffic flow (Covington downtown, Dixie Highway, Richmond Rd. Lexington), parking for sporting events (Commonwealth Stadium), and traffic impact studies for new developments (Fayette Mall expansion, Wal-Mart stores, etc.).

Student program planners normally arrange social and professional events and attendance at Kentucky Division and Southern Section ITE meetings with practicing engineers during each year. Membership is open to any Civil

Engineering student. Information concerning the student chapter and applications for membership can be obtained from the officers or the faculty advisor of UK-ITE.

The UK-ITE student chapter has also been involved in outreach activities sponsoring clothes and food drives for various organizations and members have made presentations to high school students regarding civil engineering education.

KENTUCKY SOCIETY OF PROFESSIONAL ENGINEERS STUDENT CHAPTER (Professor Scott Yost, Faculty Advisor)

The Kentucky Society of Professional Engineers is the only professional society in Kentucky whose membership is drawn from all of the engineering disciplines. The student chapter of the Society therefore is open to all students enrolled in the College of Engineering. The UK organization is affiliated with the Bluegrass Chapter of the State organization, KSPE (Kentucky Society of Professional Engineers). Members of the student chapter meet several times a year with the Bluegrass Chapter at luncheons and other events. This gives students an opportunity to hear and meet with professional engineers as they discuss events that occur in their practices.

Another major event made available to 20 of the KSPE student chapter members in most years is the KSPE Leadership/Management Seminar for Engineering Students in Kentucky. The seminar familiarizes engineering students with the professional aspects of engineering including interpersonal relationships, management, leadership, professional attitudes and behavior, goal setting, career objectives, and understanding the impact of these concepts on one's career development. These objectives are achieved through lecture, example, and student participation. Activities run from Friday night through Sunday noon, including scheduled breaks, meals, and group exercises. Sixteen practicing professional engineers conduct the two-day seminar.

LOST-AND-FOUND

The College maintains a lost-and-found service to assist in recovering lost items. Items found should be taken to closest area listed below:

| | |
|-----------------------------------|-----------------------------------|
| Frank P. Anderson Tower (FPAT) | Engineering Library (third floor) |
| Oliver H. Raymond (OHR) Building | 161 Raymond Building (CE Office) |
| Ralph G. Anderson (RGAN) Building | 375 RGAN (Student Records) |
| S.J. "Sam" Whalen Building (SJW) | 107 SJW (OES Office) |

MATHEMATICS

Students who enroll in the College of Engineering should have demonstrated great interest and ability in mathematics prior to enrollment. Probably no subject in the curriculum has more influence on the successful completion of an engineering degree than mathematics. As an absolute minimum, a student should have completed the equivalent of two years of algebra, one year of geometry, and a course in trigonometry. Calculus is also desirable with a minimum of pre-calculus. Pre-calculus mathematics means a course beyond Algebra II, containing analytic geometry, trigonometry, and functions. Students who have not completed the equivalent of at least 12 weeks of trigonometry are advised to enroll in MA 112, since trigonometry is a prerequisite for surveying (CE 211) and for integral calculus (MA 114 – Calculus II). If trigonometry is needed, it can be taken concurrently with MA 113, but must be completed before the student enrolls in second calculus.

All incoming students are required to take the ALEKS math placement exam unless they have an ACT math subscore of 30 or above (or SAT math score of 680 or above) or have completed a college-level math course equivalent to UK MA 109 (College Algebra) or MA 111 (Introduction to Contemporary Math) or higher at UK or another institution.

The ALEKS placement exam is an online placement test that will place students into their first college math course based on their ALEKS score. Students should consult with their academic advisor before registering for courses. To see where your subscore places you please see the math placement chart. <http://dib.uky.edu/AE/sites/www.uky.edu/AE/files/PlacementScoreChart.pdf> (Please note: this chart is for information purposes only. Students should always consult with their academic advisor before registering for courses.) The ALEKS online placement test allows students access to an initial assessment and an additional attempt once the student has spent a minimum of three hours working in the online learning modules. The student then has access to the online learning modules for six months.

Admitted and current UK students will access the test by using their Link Blue username and password (the same as they would for their myUK) If you have any problems with sign on, please contact the UK Help Desk at 859-218-4357. If you are having any other technical problems, contact ALEKS at 714-619-7090 or <http://support.aleks.com>

If during your placement exam process described in the previous paragraph, you do not qualify for MA 113 (Math ACT of 27 or higher, Math SAT 620 or higher or placement exam of 75% or higher) or MA 110 (Math ACT of 23 or higher, Math SAT 540-610 or placement exam of 50% or higher), you will be required to pass with a C or better the MA 109 and MA 112 classes. In addition, if your mathematics skills need improving, you are strongly encouraged to complete such preparation at a community college, e.g., Bluegrass Community and Technical College, as well as any civil engineering curriculum courses for which you are qualified to take and are offered at the community college.

Note that MA 123 is not a substitute for the required MA 113, and does not count toward the requirements for the BSCE. It would be taken as a preparatory course for MA 113 instead.

MA 109, MA 110, MA 112, MA 113, MA 114, and MA 123 are available as both regular and as correspondence courses (see CORRESPONDENCE COURSES). They are also usually offered by the Community Colleges. In addition, credit for MA 113 may be obtained through the College Level Examination Program (CLEP) or through an Advanced Placement examination. See those sections in the University catalog.

NATIONAL SOCIETY OF BLACK ENGINEERS STUDENT CHAPTER (Prof Sebastian Bryson, Advisor)

UK NSBE Chapter is committed to the mission of NSBE: “To increase the number of culturally responsible black engineers, who excel academically, succeed professionally, and positively impact the community.”

The UK Chapter is dedicated to executing this mission through various programs, such as our workshops that focus on Resume Writing, Networking, and Improvement of Interviewing Skills. In addition, the chapter invites guest speakers from several different Engineering Firms. NSBE welcomes students of all majors who are interested in joining an organization that promotes academic excellence, community support, personal growth, professional development and long lasting networking relationships.

NO SMOKING POLICY

The University has adopted a no-smoking policy on the entire campus, buildings and grounds.

OPTIONAL CONCENTRATION, BSCE

Only one undergraduate degree is awarded in civil engineering: The degree of Bachelor of Science in Civil Engineering. This is the only designation that will appear on the student’s official transcript and diploma. However, the elective courses in the undergraduate curriculum enable each student to gain increased depth in a specialty area of interest. Each student, working with their advisor, is urged to choose the electives that best satisfy their individual requirements.

In the descriptive material that follows, the listed technical, design and supportive electives are recommendations and are not requirements.

General Civil Engineering

It is not necessary for students in civil engineering to concentrate at the undergraduate level. In fact, concentrations may be counterproductive for the following: students that desire a broad civil engineering background or have not developed specific civil engineering interests; students planning advanced education in other areas as law, medicine, business, etc.; and for students having highly developed interests not encompassed by the several areas of concentration. Such individuals are encouraged to select their elective courses from those that best meet their individual educational objectives.

Construction Engineering and Project Management

The civil engineer engaged in construction may be involved with the design of construction support systems such as form work, scaffolding, lifting apparatus, etc. and/or the management of construction resources such as labor, materials, equipment, money and time. Desired attributes for engineers in construction are a broad civil engineering background, an understanding of project management, computer literacy, and an ability to communicate both orally

and in writing with technical and non-technical people alike. Typically, engineers in construction are involved with taking plans and specifications developed by specialists and translating these into completed projects consisting of buildings, highways, bridges, tunnels, etc. – on time, within budget and to a specified quality. This process requires the ability to understand the technical aspects of the project and communicate them to owners, bankers, public organizations, and other interested parties. Opportunities abound for engineers in construction, for instance, starting in a field position and progressing to project manager and on to upper management in a construction company. Alternate career paths lie in organizations that buy construction services or organizations that support construction such as banks, insurance companies, material and equipment suppliers, and a variety of public agencies.

| | |
|------------------------------|-------------------------|
| Engineering Science Elective | EM 313 |
| Math or Science Elective | MA 322 |
| Structures Elective | CE 482 (F, Sp & Sum) |
| Technical Design Electives | CE 508 (F), CE 579 (Sp) |
| Technical Elective | CE 509(F) |
| Supportive Elective | CE 507 (F) |

Environmental/Water Quality Engineering

Water quality control engineers apply their technical skills to the solution of problems associated with water treatment and water pollution control. They design facilities for the treatment of water supplies to produce safe and aesthetically acceptable drinking water. They design facilities for the treatment of municipal and industrial wastewater to produce effluent acceptable for discharge back into the environment. The design of facilities for both water and wastewater treatment requires a knowledge and understanding of many unit processes and operations which are synthesized into an overall treatment system. These processes and operations may generally be classified as physical, chemical, or biological in nature. Therefore, training in chemistry and biology in addition to the traditional engineering sciences is invaluable to a water quality control engineer.

The environmental aspects of water quality control engineering are concerned primarily with the movement and behavior of water pollutants in natural waters. A typical problem is the determination of the permissible quality of treated wastewater effluent that may be discharged at a specific point so that the water quality standards for the receiving water are not violated. The analysis and solution of this problem typically requires knowledge of the physical, chemical, and biological phenomena associated with the receiving water and the application of computer modeling. The solution then leads to the design of the appropriate wastewater treatment facilities to produce an effluent with the required quality.

Water quality planning is an integral part of the field. Practicing engineers develop long-range plans for the protection and enhancement of water quality for areas of various geographical sizes - a river basin, for example. In performing this planning function, they utilize basic planning concepts, mapping, hydrology, economics, statistics, and computer modeling, in addition to their basic water quality control engineering skills.

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|------------------------------|--|
| Engineering Science Elective | ME 220 |
| Math or Science Elective | CHE 236 |
| Structures Elective | CE 482 (F, Sp & Sum) |
| Technical Design Electives | CE 551 (Sp), CE 549 (Sp) |
| Technical Elective | CE 555 (F) |
| Supportive Elective | Environmental engineering certificate course |

Geotechnical Engineering

Geotechnical engineers are involved in the design and construction of numerous civil engineering systems. For example, structural foundations, highway and airfield pavements, bridge piers and abutments, retaining walls, earth and rock fill embankments, containment structures for solid and liquid wastes, dams and levees, canal and roadway cuts, shafts and tunnels. They must have an unusually broad background of training and experience that includes physics, geology, mechanics, hydrology, structures, and construction practice. Modern geotechnical practice makes extensive use of the computer for analysis and design, data acquisition and reduction, planning and scheduling, and cost analysis. Additional formal education via the Master of Science in Civil Engineering Degree is essentially a requirement to practice geotechnical engineering. A Geotechnical engineer has opportunities to work in the field and laboratory as well as in the design office.

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|------------------------------|---------|
| Engineering Science Elective | EM 313 |
| Math or Science Elective | MNG 551 |

| | |
|----------------------------|--------------------------|
| Structures Elective | CE 486G (F, Sp) |
| Technical Design Electives | CE 579 (Sp), CE 589 (Sp) |
| Technical Elective | CE 487G (F) |
| Supportive Elective | CE 534 (F) |

Hydraulic Engineering

Hydraulic engineering deals with the engineering analysis and design of systems to transport liquids. This includes small and large systems of pipes, prismatic channels, and natural channels. All aspects of the liquid transportation process are of interest including hydraulic machinery such as pumps and turbines, hydraulic controls such as valves and weirs, hydraulic structures such as dams and spillways, and models. Transportation of solid-liquid slurries and sedimentation problems are also covered.

| | |
|------------------------------|--|
| Engineering Science Elective | ME 220 |
| Math or Science Elective | MA 321, MA322, MAT 432G, or EM 313 |
| Structures Elective | CE 486G (F, Sp) |
| Technical Design Electives | CE 549 (Sp), CE 551 (Sp) |
| Technical Elective | CE 541(F) |
| Supportive Elective | another course from Math or Science Elective recommendations |

Structural Engineering

Structural engineering is concerned with the design and analysis of all fabricated objects whose primary function is load resistance, i.e., load carrying portions of buildings, bridges, aircraft, towers, radar domes and antennas, retaining walls, drilling platforms, etc. In addition to the basic design, structural engineers must also concern themselves with the economics, esthetics, and the social implications of their creations. They rely heavily in this work on the laws of mechanics, material science, and mathematics, as well as on experience, judgment, and engineering intuition.

Upon completion of this concentrated undergraduate program, the student is qualified to work either as a junior engineer in a structural design group, to work as a resident engineer or field engineer on construction projects, or to continue formal education as a graduate student in structural engineering. Additional formal education via the Master of Science in Civil Engineering Degree is becoming increasingly important in the practice of structural engineering. A number of states, including Kentucky, encourage or require specialized professional licensure for practitioners in this field.

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|------------------------------|--|
| Engineering Science Elective | EM 313 |
| Math or Science Elective | MA 321, MA 322 or ME 220 |
| Structures Elective | CE 486G (F, Sp) |
| Technical Design Electives | CE 579 (Sp), CE 589 (Sp) |
| Technical Elective | CE 487G (F) |
| Supportive Elective | CE 584 (F), CE 586 (Sp), ME 501, ME 513, or ME 532 |

Surveying

According to one of the many definitions of surveying, surveying includes “those activities involved in measuring the physical features of any surface or space and representing them for such purposes as engineering projects of resource evaluation and development plans”. This implies that Surveying, often aided by the relatively new sciences Geographic Information Systems and Global Positioning, is a necessary part of the planning, design and layout of all civil engineering projects. The American Society of Civil Engineers recognizes surveying as an important branch of the profession. The recent increase in interest in land use planning, resource development and the environmental impacts of man's activities has brought about a need for more civil engineers with professional training in surveying and related fields. A number of other universities in the U.S. and Canada now offer advanced degrees in this field and job opportunities are numerous. Surveyors must obtain specialized licensure as Land Surveyors.

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|------------------------------|--|
| Engineering Science Elective | EM 313 |
| Math or Science Elective | GEO 409G |
| Structures Elective | CE 482 (F, Sp, Sum) |
| Technical Design Electives | Any two acceptable technical design elective |
| Technical Elective | CE 517 (Sp) |
| Supportive Elective | GEO 305, 415 or 420G |

Transportation Engineering

Transportation engineering involves all phases of the movement of persons and goods. Transportation engineering includes the planning, design, construction, maintenance and operation of fixed facilities of the various transportation modes. Highway, railway, guide way, air, water, conveyor and pipeline systems are examples of transportation modes. Additionally, transportation engineers are involved in the regulation and accommodation of driver/operators, passengers, goods, and vehicles. Adequate training in transportation engineering therefore requires a basic knowledge of one or more of its phases or modes.

The scope of transportation engineering ranges all the way from selecting an effective location, size, color and mounting height for a simple traffic sign to the planning and establishment of design standards for a national system of interstate highways or the development of an effective set of Federal Motor Vehicle Safety standards. These tasks require utilization of available knowledge in such fields as land use planning, resource development, control of environmental impacts, engineering materials, soil mechanics, advanced surveying, photogrammetry, geographic information systems, hydrology, hydraulics, statistics, traffic laws and ordinances, and political science, in addition to application of available tools and technology for such routine tasks as traffic signing, marking and signalization, interchange design, traffic capacity analyses, accident reconstruction, and on-going research into problem areas where knowledge is lacking. In brief, transportation engineering involves utilization of almost all of the skills; knowledge and tools involved in all of the other civil engineering specialties.

Transportation engineering graduates are typically employed by private engineering consulting firms or in city, state, or federal transportation agencies where the specialized knowledge from several individuals or groups can be utilized effectively. Advancement in practice normally requires a period of continuing improvement of personal specialized knowledge of one or more phases (planning, design, construction, maintenance, operation) of a transportation mode, accompanied by developing capability for management of the input of specialized knowledge from other Civil, Mechanical, and Electrical engineers.

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|------------------------------|---|
| Engineering Science Elective | EM 313 |
| Math or Science Elective | GEO 409G |
| Structures Elective | CE 482 (F, Sp, Sum) |
| Technical Design Electives | CE 531 or CE 533, CE 534 |
| Technical Elective | CE 433, CE 581, CE 539 or other design elective |
| Supportive Elective | GEO 285 or GEO 305 |

Water Resources Engineering

Water resources engineering is concerned with the development, use, and management of the world's water resources. Consequently, water resources engineers must have a broad background of training and experience in the areas of hydrology, fluid mechanics, chemistry, economics, statistics and computer modeling. They are responsible for the planning, design, construction, operation, and management of water resource projects. Such projects may include the following objectives: water supply, flood control, navigation, hydroelectric power, recreation, fish and wildlife enhancement, and urban drainage. Water resources engineers are also responsible for analyzing the impact of other engineering projects on the natural hydrologic system. Most are employed by private engineering consulting firms or in city, state, or Federal agencies that deal with water resources.

| | |
|------------------------------|---------------------------|
| Engineering Science Elective | ME 220 |
| Math or Science Elective | MA 321 or MA 416G |
| Structures Elective | CE 486G (F, Sp) |
| Technical Design Electives | CE 549 (Sp), CE 551 (Sp) |
| Technical Elective | CE 542 (Sp) or CE 547 (F) |
| Supportive Elective | CE 568 (F) or CE 541 (F) |

OUTSTANDING CIVIL ENGINEERING AWARDS

The Chi Epsilon Student Honorary gives five different outstanding awards each year: Outstanding Civil Engineering Junior, Senior, University Scholar, Graduate Student, and Faculty Teacher. The outstanding junior, senior, university scholar and graduate student awardees must be classified respectively as a junior, senior (less than 38 credit hours from graduation), and graduate students in the spring term of the election. Only the names of those undergraduate students who have achieved Engineering Standing status are eligible to be placed on the ballots. The University Scholar student can be a senior enrolled in the graduate program. A graduate student must have completed the Bachelor's of Science degree in order to be eligible. Furthermore, all nominees must be enrolled at the University of

Kentucky. Chi Epsilon solicits the Civil Engineering Faculty for nominees. From the nominations, the Chi Epsilon advisor and a minimum of two Chi Epsilon officers select between two and four students who received the largest number of nominations and place their names on ballots. All civil engineering junior, senior, and graduate students are eligible to vote for these awards.

The outstanding faculty teacher nominees are selected by the members of Chi Epsilon as well as by the officers of all other civil engineering student organizations. Each member or officer should nominate between 1 – 4 faculty members. The nominees should not be ranked. A minimum of three Chi Epsilon officers will count the votes that each faculty member has received, selecting between 2 – 4 faculty members that have received the largest number of votes. Civil engineering juniors, seniors, and graduate students votes for the outstanding faculty teacher.

PASS-FAIL (University Policy)

Because of the various requirements of the College and Department, only the supportive elective in the CE curriculum may be taken on a pass-fail basis. Courses that are taken which are not to be applied toward the degree may be taken pass-fail at the option of the student. The Department may not accept credit for courses taken on a pass-fail basis at other institutions if these courses are part of the requirements for the degree.

Except for courses offered only for pass-fail, the instructor shall not be notified by the Office of the Registrar or by another office of the University about students who are taking the course pass-fail. The instructor shall submit a regular grade to the Registrar's Office that will take the appropriate action to change the grade into the pass-fail grading track for records.

PHYSICS

The civil engineering curriculum requires 10 semester hours of calculus-based physics, eight lecture/recitation credit hours and two laboratory credit hours. More elementary physics or non-calculus-based physics courses may not be substituted. In the University of Kentucky system, the required courses are PHY 231, PHY 241, PHY 232 and PHY 242.

PROFESSIONAL LICENSURE

Students that plan to enter the practice of civil engineering in Kentucky, or most other states, should prepare for the requirements for professional licensure. In capsule form, these requirements usually include graduation from an approved (normally ABET/EAC accredited) education program, four years of acceptable practice, and successful completion of a two-part examination. Senior civil engineering students may take the first part of the examination, covering engineering fundamentals. Successful completion of this examination certifies the student to be an Engineer Intern (see also FUNDAMENTALS OF ENGINEERING EXAMINATION AND FUNDAMENTALS OF SURVEYING EXAMINATION). **NOTE:** The National Council of Examiners for Engineers and Surveyors (NCEES) has adopted a model law that recommends a minimum of 150 semester credit hours, 18 semester credit hours of upper level courses beyond the BSCE degree requirements, for licensed professional engineers beginning January 1, 2020. The jurisdictional licensure board with approval of the appropriate legislative body must carry out adoption of this model licensure law. If approved in a state that you wish to practice, any student graduating in spring 2016 or later will have to satisfy the revised graduation requirements prior to licensure.

The department encourages its civil engineering students to take the civil engineering fundamentals examination after completing the required course curriculum. Statistics show that the pass rate is much higher for currently enrolled students compared to graduates that take this exam. FE examination is computer based, which is also the case for the Fundamentals of Surveying exam.

Further information and application forms are available from the Kentucky State Board of Licensure for Professional Engineers and Land Surveyors, 160 Democrat Drive, Frankfort, Kentucky 40601 (502/564-2680); <http://www.kyboels.ky.gov>.

READMISSION

Former engineering students in good standing who have enrolled in no university work since their last attendance at the University of Kentucky are subject to all provisions of the University admissions process. This is also true for students who have been enrolled elsewhere as a transient student. Such students must file an application for readmission by the deadlines listed in the University catalog. An exception to this is made for students who attend only university summer sessions. These students do not have to apply for readmission to a summer session if they were enrolled for the preceding summer session.

Former engineering students who have been enrolled at another school in other than a transient student status

must be eligible for transfer based on the grade-point average earned at the other school. In addition, such students must be in good standing at the University of Kentucky and the other school. They must have earned a 2.0 GPA or better in work taken at another school or schools as computed separately from any grades or credits earned at the University. Such students are considered as new students and are subject to the provisions of the Department admissions policy (see ADMISSIONS). Application procedures applicable to transfer students must be followed. The only exceptions are University students who enroll elsewhere for only a summer session between a spring enrollment at the University and the fall semester. They must arrange for transcripts of summer work to be sent to the University Admissions Office immediately following the end of the summer session. Such summer work may not be credited toward satisfying a degree requirement unless the students received permission in advance to take transient work during the summer. See also the sections on TRANSFER COURSE ACCEPTABILITY and TRANSIENT WORK.

Applications for readmission are not accepted from students under suspension by any unit within the University unless they are first reinstated (see REINSTATEMENT).

REGISTRATION

University students who are planning to continue their studies during the next term must register during the priority-registration period. Failure to do so may jeopardize the student's opportunity to take needed courses during that term. Students who have failed to priority register will be charged a late registration fee and their chances of obtaining the desired schedule will be greatly reduced. Continuing students who are unsure of their plans to return to the University during the next semester should advance register anyway. If they decide not to return, they should notify the Registrar by mail before the first day of class.

The procedure to priority register is given below:

1. You will register by **myUK** <https://myuk.uky.edu/>. Also, students who miss their primary window have an opportunity to advance register during a secondary window.
2. With the help of your advisor, select the courses in which you should enroll. Generally, **you should take pre-requisite and required courses at the earliest opportunity. Failure to do this can create serious problems if conflicts arise as you approach your last semester before graduation.** You should plan your schedule to permit you to enroll in an alternate section of a course should your first choice be closed. You may also need to plan to take an alternate course if it becomes impossible to schedule the course you initially planned to take.
3. Upon completing your schedule of classes, fill out the registration permit and have your advisor sign your registration permit. Then take your completed and signed permit to the Student Affairs Officer in the Civil Engineering office (161 Raymond Building). The Officer will release the electronic advisor hold. **Students cannot register for classes until this hold is removed.** Then you may register during your primary registration window using **myUK** at <https://myuk.uky.edu/>. **If you should miss your primary registration window**, you have a secondary registration window.
4. Occasionally, students need to enroll in courses which are full, or for which they do not have all the prerequisites. These students must obtain an "Override Permit" from the Director of Undergraduate Studies for a CE course, take that permit to the Student Affairs Officer and the admissions block from such course(s) will be removed allowing you to enroll. Other over-ride permits may be obtained from the department within the college of each course. The department's Student Affairs Officer will be glad to assist students should they have any questions or problems.

You can change your schedule using **myUK** <https://myuk.uky.edu/> during the first week of each semester and during designated "drop/add" periods (see CHANGING SCHEDULE).

Continuing students who did not advance register may register during the first week of the semester but will be subject to a late registration fee. New and readmitted students are assigned a specific date on which to register by the Admissions Office.

Senior students who plan to graduate at the end of the semester for which they are registering must complete the "Application for Degree" online through the [myUK portal](#) by **November 30** for degrees to be awarded the following **May**, by **February 28** for degrees to be awarded the following **August**, and by **June 30** for degrees to be awarded the following **December**. Students who apply late, or who fail to apply at all, may not graduate at the expected time. See the Student Records Office in RGAN 375 for questions.

Some new and readmitted students also have the opportunity to advance register. The process, which is different from that for continuing students, is fully described in instructions made available when the student is notified

of acceptance.

REINSTATEMENT INTO THE UNIVERSITY

A student who has been suspended for academic reasons and has remained out of the University for at least a semester and a summer session (a semester for students academically suspended at the end of a summer session), may be reinstated by the dean of the college in which they plan to enroll when they present evidence that they are capable of performing at the level required to avoid being suspended a second time. After being reinstated, students must apply for readmission to the University.

A student who has been academically suspended will, upon reinstatement, be placed on scholastic probation and be subject to final academic suspension from the University if: (1) the student acquires any additional deficit during any semester or session while on scholastic probation, (2) the student has not reduced the deficit by eight quality points or eliminated it by the end of the second semester following the reinstatement, (3) the student has failed to meet the requirements for removal from scholastic probation by the end of the third semester following the reinstatement. Once reinstated students have been removed from scholastic probation, they will be subject to the same conditions for subsequent academic suspension as a student who has not previously been academically suspended. (See also ENGINEERING COLLEGE PROBATION, ACADEMIC SUSPENSION AND REINSTATEMENT for the policy of the College on reinstatement.) **Note:** The above policy pertains to reinstatement into the University. The College of Engineering policy on reinstatement requires the student remain outside the College of Engineering for at least one year. Further details on the College of Engineering policy are given in the section ENGINEERING COLLEGE PROBATION, ACADEMIC SUSPENSION AND REINSTATEMENT.

REPEAT OPTION

An undergraduate student has the option to repeat once as many as three different courses. For such courses only the grade, credit hours, and quality points for the second completion is used in computing academic standing and credit for graduation. A student exercising the repeat option must consult with their advisor and notify the Student Records Office in 373 RGAN, the Student Record's Office will notice the Office of the Registrar. Forms for this purpose are available in the Department Office, 161 Raymond Building. A student may exercise the repeat option at any time prior to graduation. However, application of the repeat option is only on the second attempt at a course. If the student officially withdraws from the second attempt, then the grade, credit hours, and quality points for the first completion constitute the grade in that course for official purposes. The second attempt constitutes exhaustion of one of the three options to repeat a course under this provision unless, at the time of withdrawal, the instructor and the dean of the college grant permission to attempt the same course again. For additional information, see the University Bulletin.

SCHOLARSHIPS

Students in the Department of Civil Engineering may apply and compete each year for over one hundred scholarship awards. Applications are due in mid-semester of the spring semester for the following academic year. Three specifically different programs are available.

The **Kentucky Transportation Cabinet** offers each year approximately 45 Transportation Scholarships to UK students who are also Kentucky residents. These provide each recipient with academic year stipends of \$4800 per semester (\$9600 for the academic year) for freshman and sophomore students and \$5200 per semester (\$10,400 for the academic year) for junior and senior students. Opportunities for summer jobs are also available. These scholarships require the recipient to accept employment with the Kentucky Transportation Cabinet after graduation for one year for each year on the scholarship. Furthermore, **students on the Transportation Scholarship are considered employees of the Kentucky Transportation Cabinet and thus their scholarships are subjected to the usual payroll taxes.** Information and application forms are available from the Student Records Secretary in the Department of Civil Engineering, Director of Student Services in the College of Engineering, or from the Kentucky Transportation Cabinet. A selection team within the Civil Engineering Department initially evaluates the applications and selects the recipients. The program is subsequently administered by the Kentucky Transportation Cabinet.

The **Civil Engineering Department Service Team** each year awards approximately 75 Civil Engineering Scholarships. These annual scholarships range in value from \$1,000 to \$5,000, currently totaling around \$125,000 per year. Primary support for these scholarships is from endowments and gifts received from Civil Engineering alumni, consulting engineering and construction related firms and individuals. Multiple scholarships are awarded annually from several of the accounts. Information and common application forms are available from the Director of

Student Services in the College of Engineering. This program is administered by the College of Engineering. Currently, the following scholarships are available:

- **The Allen Company, Inc. Scholarship** - Established May 5, 1953 by the Allen Company, Inc. Winchester, Kentucky, to support the need for graduate engineers in the ever-growing field of engineering. Preference given to children of employees of the Allen Company, Inc. based on scholarship, character and need.
- **James R. and Diana M. Miller Scholarship in Engineering** - Established March 31, 2006 by James R., BSCE '74, and Diana M. Miller to support students majoring in civil engineering who are in the top one-third of their class with preference given to students from the State of California.
- **Bechtel Award in Engineering** – Established in fall 2006 by the Bechtel Foundation to support undergraduate civil engineering education at the University of Kentucky.
- **David K. Blythe Scholarship** – Established in honor of David K. Blythe, BSCE '40, MSCE '48, former department chair and associate dean for continuing education. Strong academic performance shall be the first consideration in selection and financial need may be considered when applicants are of equal academic merit.
- **Nicholas C. Boogher Scholarship** – Established by Ruby Gault Boogher Duggan, Knoxville, TN in memory of Mr. Boogher, 1936 civil engineering graduate. The fund supports sophomores, juniors and seniors majoring in civil engineering and is based on merit without regard to other resources that may be available to the students or their parents.
- **Bottoms Engineering and Service, Inc. Scholarship** – Established by Bottoms Engineering and Service, Inc., Frankfort, KY to support students from Central Kentucky within a 40-mile radius of Frankfort, KY who are majoring in civil engineering.
- **James A. Caywood Memorial Scholarship** – Established in memory of James A. Caywood, BSCE '44. Given to a junior or senior enrolled in civil engineering that has maintained a 3.0 GPA. Preference is given to graduates of a Kentucky high school. Consideration will be given to students who have demonstrated strong leadership skills through active participation in civic and professional organizations. Students shall write a short narrative on why they have chosen civil engineering as a career.
- **William N. and Ocie M. Downey Scholarship** – Established by the estate of William N. Downey, BSCE '25. Awarded to students in the College of Engineering based upon the aptitude and character of the student. No one person shall receive more than \$1,000 per school year. Twenty to thirty are awarded annually.
- **Paul A. Faulkner Memorial Scholarship** – Established in memory of Paul A. Faulkner, BSCE '51, MSCE '56. Given to students enrolled in civil engineering. Preference will be given to students majoring in construction engineering and project management.
- **2nd Lieutenant Jeffrey C. Graham Memorial Scholarship** – Established in memory of 2nd Lieutenant Jeffrey C. Graham, BSCE '03 who was killed during the Iraq War on February 19, 2004. Given to a student demonstrating academic excellence.
- **Donn E. Hancher–C. Michael Garver Scholarship** – Established by Mike Garver, BSME '60. Given to students who have demonstrated a need for financial aid and potential for academic success and are majoring in civil engineering with a preference given to students majoring in construction engineering and project management who may not be eligible for merit-only scholarships or who may have a GPA lower than 3.0. Multiple scholarships are awarded each year.
- **Robert Smiley Harp Memorial Scholarship** – Established in memory of Mr. Harp, BSCE '28. The recipient shall be a civil engineering major.
- **Hazelet and Erdal Scholarship** – Established by Hazelet and Erdal Consulting Engineers. Given to a junior and/or senior in the Department of Civil Engineering.
- **Buckner Hinkle, Sr. Scholarship** – Established in honor and memory of Buckner Hinkle by Hinkle Contracting Corporation, Paris, KY. Selection is based on academic achievement and financial need. Preference is given to students from Bourbon, Breathitt, Casey, Harrison, McCreary, Nicholas, Powell, Pulaski and Wolfe counties.
- **HMB Professional Engineers Scholarship** – Established by HMB Professional Engineers, Frankfort, KY, to provide financial support to junior level civil engineering students from Franklin and its contiguous counties

demonstrating academic excellent as well as good communication and interpersonal skills. This scholarship requires an interview by HMB Professional Engineers and also requires a summer internship with the company.

- **Honeycutt Scholarship** – Established by Paul W. Honeycutt, Honeycutt Mechanical Contractors, Lexington, KY. Awarded to students who demonstrate academic excellence, financial need, and from Knott County, KY.
- **James Houchin Scholarship** – Established in memory of James E. Houchin, BSCE '61. Given to a civil engineering senior in good academic standing with financial need. Preference shall be given to Kentucky residents.
- **Larry M. and Clara M. Judy Scholarship** – Established by Larry Judy, BSCE '61 with primary preference given to employees of Judy Construction Co. and/or their descendants or students from Harrison and adjacent counties.
- **Cy Layson Scholarship** – Established in memory of Cyrus S. Layson, MSCE '54. Given to a junior or senior civil engineering major in good academic standing that demonstrates financial need. Preference is given to a Kentucky resident.
- **Richard C. Page, Jr. Scholarship** – Established in memory of Richard C. Page, BSCE '56. Preference shall be given to students who have graduated from a Kentucky high school who demonstrate need for financial assistance.
- **Ben T. and Diane B. Quinn Endowed Scholarship in Civil Engineering** - Established April 14, 2009 by Ben T. Quinn, BSCE 66, Glasgow, Kentucky, to support undergraduate students majoring in Civil Engineering.
- **Raymond Scholarship** – Established by Anne Hart Raymond and the late Oliver H. (BSCE '54) Raymond. Applicants must demonstrate academic achievement and financial need. Preference is given to Shelby County natives.
- **Carol Anderson Robertson & Kenneth N. Robertson Scholarship** – This scholarship has been established through the generosity of Carol and Kenneth Robertson, BSCE '58. Must be a resident of the state of Kentucky majoring in civil, chemical or materials engineering and show need for financial assistance.
- **D. Joseph Sparks Scholarship** – Established in memory of D. Joseph Sparks, BSCE '58. Awarded to civil engineering majors studying construction engineering and project management who demonstrate satisfactory academic progress and show need for financial assistance. Preference is given to Kentucky or Ohio residents.
- **William and Rita Trefz Scholarship** – Established in memory of William Trefz, BSCE '58 with preference given to students from Franklin and its contiguous counties demonstrating academic excellence as well as good communication and interpersonal skills.
- **Kentucky Section of ASCE** provides two scholarships to junior, senior or first year graduate students in the department. Scholarship criteria include upper 1/3 of your class, membership in the Student Chapter of ASCE, and community or professional service.
- **Robert Eugene Fish Scholarship** – Established in the memory of and honor of Robert Eugene Fish, BSCE '38. Awarded annual to a student who demonstrates an interest in Hydraulics, demonstrates academic excellence, is a citizen of the U.S., participates in extracurricular activities, maintains high moral character and has attained at least Junior status.

Several other scholarships are offered each year to civil engineering students based on **university-wide and college-wide competitions**. Specific scholarships vary from year to year, typically ranging from 10 to 20 per academic year. Check with **Ms. Mary Michael McDonald** (859-257-0569; marymichael.mcdonald@uky.edu) and the Department of Civil Engineering Office.

SCHOLASTIC PROBATION

The academic record of each freshman student will be reviewed after the first full semester. Students are expected to maintain a minimum grade point average (GPA) of 2.0 each semester that they are enrolled in the College of Engineering at the University of Kentucky. A preponderance of this minimal academic performance will prevent the student from progressing towards Engineering Standing (see **ADMISSION TO THE DEPARTMENT OF CIVIL ENGINEERING**). Further information on minimum standards is provided in the section **ENGINEERING COLLEGE PROBATION, ACADEMIC SUSPENSION, AND REINSTATEMENT**.

SECOND BACCALAUREATE DEGREE

A student who has earned a bachelor's degree in the College of Engineering may earn a second bachelor's degree by meeting the following three conditions on the work applicable to the second degree:

1. The student must have been admitted to engineering standing in the program leading to the second degree at least for the final semester, or equivalent terms, prior to the completion of the degree requirements, and must be enrolled as a student in that degree program during the final semester or term.
2. The student must complete a minimum of 15 credit hours of departmentally approved courses at or above the 300 level.
3. To earn a second degree, a student must complete all degree requirements in that program.

SOCIETY OF WOMEN ENGINEERS STUDENT CHAPTER (Ms Kim Sayre, Advisor)

Society of Women Engineers, founded in 1950, is a non-profit educational service organization. SWE is the driving force that establishes engineering as a highly desirable career aspiration for women. SWE empowers women to succeed and advance in those aspirations and be recognized for their life-changing contributions and achievements as engineers and leaders.

The specific objectives of the Society are to:

- Inform young women, their parents, counselors, and the general public of the qualifications and achievements of women engineers and the opportunities open to them,
- Assist women engineers in preparing themselves for a return to active work after temporary retirement,
- Serve as a center of information on United States women in engineering, and
- Encourage women engineers to attain high levels of educational and professional achievement.

SWE student sections have been chartered by many colleges, universities, and engineering institutions, including the University of Kentucky College of Engineering.

SPECIAL DEPARTMENTAL EXAMINATIONS

Any full-time or part-time student enrolled in the University, and in good academic standing, may request a special examination for credit in any course (other than for meeting the writing requirement) offered in the University system regardless of whether the student has audited the course, is currently enrolled in it, or has studied for it independently. The request for special examination may be denied if the student has not furnished evidence of being reasonably prepared to take the examination, or if the course is of such a nature that credit by examination is inappropriate. (The fact that a student has failed the course may be regarded as evidence that the student is not prepared to take a special examination.)

Application for a special examination must be made in writing on a form obtainable from the Registrar's Office. Undergraduates should address requests to the chair of the Department in which the course is given.

Credit for courses taken by special examination is considered residence credit. There is no fee for taking a special examination. The limits on maximum loads are waived in cases where the excess is due to special examination credit.

The special examination normally results in a letter grade for the course. However, with the approval of the Director of Undergraduate Studies and the Department Chair, a student may take the special examination on a Pass-Fail basis; this includes any course not normally available under the Pass-Fail option. Credit derived in this manner shall not reduce the number of courses permitted under the Pass-Fail rules, (see also PASS-FAIL).

Students whose native language is other than English and who have had formal instruction in schools of their own country shall not be permitted to take examinations for credit in that language.

No more than half the total credits required for the BSCE may be taken by any combination of CLEP, Spe-

cial Examinations, or other devices.

STUDENT ONLINE SERVICES

Your schedule, grades, unofficial transcript, address, student profile, and other information using myuk, <https://myuk.uky.edu>. Log in with your LinkBlue credentials.

STUDENT ORGANIZATIONS

Student organizations are an outgrowth of student interest and serve the needs of a variety of students. Many provide programs that supplement the classroom experience and extend into areas of service for the community. All provide learning and leadership training for participating students.

There are over 260 registered student organizations on the UK campus. For further information regarding campus student organizations and activities, contact the Student Organizations Center, 106 Student Center, (859) 257-1099.

Student organizations that are typically of interest to Civil Engineering students are included in this Handbook. They include: American Railway Engineering and Maintenance-of-Way Association (RailCats), American Society of Civil Engineers (ASCE), Chi Epsilon (Civil Engineering Honorary), Institute for Transportation Engineers (ITE), the Kentucky Society of Professional Engineers (KSPE), the National Society of Black Engineers (NSBE), the Society of Women Engineers (SWE), and Tau Beta Pi (Engineering Honorary). Specific sections are included in this Handbook on each organization under the title of the organization (see AMERICAN SOCIETY OF CIVIL ENGINEERS STUDENT CHAPTER, CHI EPSILON, INSTITUTE FOR TRANSPORTATION ENGINEERS STUDENT CHAPTER, KENTUCKY SOCIETY OF PROFESSIONAL ENGINEERS STUDENT CHAPTER, NATIONAL SOCIETY OF BLACK ENGINEERS STUDENT CHAPTER, SOCIETY OF WOMEN ENGINEERS STUDENT CHAPTER and TAU BETA PI).

STUDENT RECORDS

The Registrar maintains official academic records for each student. The Department also maintains a set of records that are used extensively by advisors. Errors in the departmental records should be reported to the departmental Student Affairs Officer.

SUPPORTIVE ELECTIVE

A supportive elective is essentially a “free” elective; that is, it may be chosen by the student from any of the courses offered by the University. The only courses that are not acceptable as a supportive elective are those courses that are considered elementary versions of required courses such as pre-calculus mathematics and elementary physics. Chemistry laboratories can be used to satisfy the supportive elective requirement. Co-op credit hours can also be used to satisfy the supportive elective.

Civil engineering students desiring to have an undergraduate specialization should consult the section, OPTIONAL SPECIALIZATION, BSCE, for a list of suggested supportive electives that will further their professional education.

TAU BETA PI (Professor Bruce Walcott (ECE), Faculty Advisor)

“...to mark in a fitting manner those who have conferred honor upon their Alma Mater by Distinguished scholarship and exemplary character as undergraduates in engineering...” That is what Edwin Higginson Williamson, Jr. had in mind when he founded the Tau Beta Pi Association in 1885 at Lehigh University. For years Phi Beta Kappa had conferred honor upon outstanding graduates in the field of liberal arts and sciences. Dr. Williamson thought that such recognition was needed for outstanding scholars in engineering, and thus Tau Beta Pi was founded.

Since that time, Tau Beta Pi chapters have increased in number until today there are 134 active chapters that have initiated 158,000 members. The chapter at the University of Kentucky (Kentucky Alpha) was established in 1902. It was then the eighth chapter in the nation. Kentucky Alpha has been active ever since, except for two years near the end of World War II.

Tau Beta Pi, like Phi Beta Kappa, is an honor society, and requirements for membership are stringent. Only the upper one-eighth of the junior class and upper one-fifth of the senior class are eligible for membership.

Tau Beta Pi sponsors an Engineering Awards Banquet each year in the spring semester along with the other honor societies in engineering. New members of all the honor societies are recognized and honored during this ban-

quet, one of the highlights of each year.

Tau Beta Pi and Kentucky Alpha have much to offer the individual student. All incoming engineering students should consider attaining membership in Tau Beta Pi as one of their goals and make every effort to qualify for membership.

TECHNICAL ELECTIVES AND DESIGN ELECTIVES

Technical electives may be chosen from any of the courses at the 300 level or above that carry a CE prefix and in which a student is qualified to enroll (exclusive of courses required in the BSCE curriculum). Students are required to select two design electives from different areas. A list of technical/design elective courses regularly offered by the Department and the semester in which they are offered is given below by program area in Civil Engineering. (* indicates the design courses)

Construction Engineering and Proj. Mgt

| | |
|---|---|
| CE 507 Construction Safety and Health | F |
| *CE 508 Design and Opt Const Operations | F |
| CE 509 Control of Construction Project | F |

Hydraulics Engineering

| | |
|-------------------------------------|----|
| CE 541 Intermediate Fluid Mechanics | F |
| *CE 549 Engineering Hydraulics | Sp |

Environmental/Water Quality Engineering

| | |
|--|----|
| *CE 551 Water and Wastewater Treatment | Sp |
| CE 555 Microbial Aspects of Envr Engrg | F |

Water Resources Engineering

| | |
|-------------------------------------|----|
| CE 542 Intro to Stream Restoration | Sp |
| CE 547 Watershed Sedimentation | F |
| CE 568 GIS App. for Water Resources | F |

Geotechnical Engineering

| | |
|----------------------------------|----|
| *CE 579 Geotechnical Engineering | Sp |
|----------------------------------|----|

Material Engineering

| | |
|---------------------------------------|----|
| *CE 534 Pvmt Dsgn, Const & Mangmnt | F |
| CE 581 Civil Engineering Materials II | Sp |

Structural Engineering

| | |
|---------------------------------------|----|
| CE 486G Reinforced Concrete | F |
| CE 487G Steel Structures | F |
| CE 584 Dsgn Timber and Masonry Struct | F |
| CE 586 Prestressed Concrete | Sp |
| *CE 589 Design of Structural Systems | Sp |

Transportation Engineering

| | |
|--------------------------------------|----|
| CE 433 Rail Freight Pasgr Ops | F |
| *CE 531 Rdwy Geom Dsgn & Ops | F |
| *CE 533 Railroad Facil Dsgn & Anal | Sp |
| CE 539 Transportation Systems Design | Sp |

Descriptions of these courses are in the section COURSE DESCRIPTIONS.

Civil engineering students desiring to have an undergraduate specialization should consult the section, OPTIONAL CONCENTRATION, BSCE, for a list of suggested technical electives.

THOMAS D. CLARK STUDY/ACADEMIC ENHANCEMENT – STUDENT SUPPORT CENTER

The Thomas D. Clark Study/Academic Enhancement office, located on the 5th floor of the Young Library (Rose Street side), coordinates 1) academic skills consulting and workshops, 2) campus tutoring services and referrals, and 3) all the services of the Writing Center. You may refer students directly to this office for all the above services. You may want to view the Thomas D. Clark Study/Academic Enhancement website at <http://www.uky.edu/UGS/Study>. You can reach the Study directly at 257-1356.

TRANSFER COURSE ACCEPTABILITY

Decisions regarding the transferability of credit hours attempted, credit hours earned, and quality points earned are made by the Registrar. Administrative responsibility for maintaining and updating all transfer equivalency agreements and dual degree agreements with other institutions of higher learning resides with the Associate Dean for Extended Campus Programs. At present, there are agreements with 23 Kentucky colleges and universities, exclusive of the Commonwealth's 14 community colleges. All institutions are SACS accredited. Of the 23 Kentucky colleges and universities with which agreements are in force, 13 offer one or more lower-division engineering course, which are maintained under the terms of the College's *Policy on the Transfer of Engineering Courses*.

In addition to the option of seeking pre-approval for engineering course equivalency, a transferring student may also submit course material for review. The equivalency request is directed to the department or academic unit responsible for the equivalent course:

- Central Advising is responsible for the University Studies courses,
- Writing Program is responsible for the composition courses,
- Physics, math, chemistry, and geology DUS's approve substitutions for courses in the appropriate areas, and
- The appropriate engineering department approves engineering courses.

If transfer equivalency is granted, the course is added to the equivalency database. Once a decision is made on the equivalency of a course, the petitioning student is notified through the degree program. A process is in place for engineering course equivalencies from non-ABET/EAC accredited institutions to be re-evaluated every six years.

Decisions regarding the acceptability of transfer work as substitutes for or waivers of specific requirements of the undergraduate Civil Engineering curriculum are made by the Director of Undergraduate Studies subject to approval by the Associate Dean for Administration and Academic Affairs of the College. Students inquiring about the acceptability of transfer work should make available a transcript and a catalog of course descriptions from the institution at which the work was completed. Students may also be required to provide a course syllabus and sample work for evaluation by the appropriate campus official.

Transfer students should be aware all candidates for a bachelor's degree in Engineering must complete 30 of the last 36 hours of the degree program in residence at the University. This is required regardless of the number of transfer hours the University may declare acceptable.

The University accepts collegiate-level degree credits earned at a fully accredited college or university. "Fully accredited" simply means that the institution is a member in good standing of one of the six regional academic accrediting associations. Transfer work from institutions outside the United States is evaluated on an individual basis upon receipt of official transcripts.

Students transferring directly from a junior or community college may not transfer more than 67 semester hours of credit to the University of Kentucky. Students transferring from a four-year college that have previously attended a two-year college outside the University of Kentucky system, will be limited to 67 semester hours of the two-year college work. The work from the four-year college will be evaluated separately.

In some cases the University may validate credits earned at a school that is not a member of an accrediting association for acceptance. This is only possible after the student enrolls and completes 24 semester hours of University work with at least a 2.0 grade-point average. This work must be in a normal degree sequence and approved by the proper academic authorities. However, in other cases, there can be no acceptance by the University of credit hours earned at an unaccredited school. Students will be notified upon receipt of their applications and official transcripts whether or not the work will be considered for validation.

Students who apply for acceptance into the Department of Civil Engineering normally will be provided a copy of a "Transfer Evaluation Form" which shows the transfer courses for which credit has been granted toward the BSCE. See also the sections on ADMISSION TO THE UNIVERSITY, ADMISSION TO THE DEPARTMENT OF CIVIL ENGINEERING, and GENERAL EDUCATION TRANSFER AGREEMENT. Transfer applicants can ask their advisor or the DUS questions regarding transfer credits at any time. However, only the DUS or Department Chair can approve acceptance of courses in lieu of a civil engineering course and approval of other courses follows the procedure described previously in this section.

TRANSIENT WORK

University students may earn some credit hours towards a University baccalaureate degree by enrolling in another school, including a UK community college, provided they have the prior approval of their Director of Undergraduate Studies and Associate Dean for Administration and Academic Affairs. Furthermore, the other school must be fully accredited and the course work must meet the University specifications for the acceptance of credit from other schools. The student should consult the Director of Undergraduate Studies prior to enrolling at another institution. If such enrollment is concurrent with enrollment at the University, the student must have the specific approval of the Associate Dean for double enrollment. It is the student's responsibility to ascertain the acceptability of coursework at another school, and its applicability towards the degree program. Improper enroll-

ment at another institution will result in the loss to the student of credit earned elsewhere.

Engineering students attending any other school without prior approval are new transfer students when they return to the College. Thus, they will be subject to all transfer student requirements of the College admissions policy (see ADMISSION and READMISSION).

Summer school attendance at another school is an exception to the above rule, but students who do not obtain prior approval for such work will not have the assurance that the credits will count toward their engineering degrees at UK.

In any event, a minimum of 30 of the last 36 credits presented for the degree must be earned from the University of Kentucky.

UKCore – General Education Requirements

The University of Kentucky's general education program – the UK Core – is foundational to a university education at the University of Kentucky. A university education is more than simply learning a set of skills in a specific area in preparation for a job or career. A university education is designed to broaden the students' understanding of themselves, of the world we live in, of their role in our global society, and of the ideals and aspirations that have motivated human thought and action throughout the ages. It must help individuals effectively put into action their acquired knowledge, to provide the bases for critical thinking and problem solving, and to develop life-long learning habits.

The UK Core is composed of the equivalent of 30 credit hours in 10 course areas that address four broad learning outcomes. Depending on choice of major or courses, some students may take more than 30 credit hours to complete the UK Core.

The UK Core Learning Outcomes

The UK Core curriculum is based on a comprehensive set of student learning outcomes that all students are expected to be able to demonstrate upon completion of a baccalaureate degree at the University of Kentucky. All UK Core courses are designed to meet one or more of the following learning outcomes:

I. Students will demonstrate an understanding of and ability to employ the processes of intellectual inquiry. [12 credit hours]

Students will be able to identify multiple dimensions of a good question (i.e., interesting, analytical, problematic, complex, important, genuine, researchable); determine when additional information is needed, find credible information efficiently using a variety of reference sources, and judge the quality of information as informed by rigorously developed evidence; explore multiple and complex answers to questions/issues/problems within and across the four broad knowledge areas: arts and creativity, humanities, social and behavioral sciences, and natural/ physical/mathematical sciences; evaluate theses and conclusions in light of credible evidence; explore the ethical implications of differing approaches, methodologies or conclusions; and develop potential solutions to problems based on sound evidence and reasoning. Students will take four 3-credit courses, one in each of the four broad knowledge areas defined above.

II. Students will demonstrate competent written, oral, and visual communication skills both as producers and consumers of information. [6 credit hours]

Students will demonstrate the ability to construct intelligible messages using sound evidence and reasoning that are appropriate for different rhetorical situations (audiences and purposes) and deliver those messages effectively in written, oral, and visual form. Students will also demonstrate the ability to competently critique (analyze, interpret, and evaluate) written, oral, and visual messages conveyed in a variety of communication contexts. Students will take one 3-hour course focusing on the development of effective writing skills, and one 3-hour integrated communications course focusing on oral and visual communication skills, along with continued development of written communication skills.

III. Students will demonstrate an understanding of and ability to employ methods of quantitative reasoning. [6 credit hours]

Students will (a) demonstrate how fundamental elements of mathematical, logical and statistical knowledge are applied to solve real-world problems; and (b) explain the sense in which an important source of uncertainty in many everyday decisions is addressed by statistical science, and appraise the efficacy of statistical arguments that are reported for general consumption. Students will take one 3-hour course on the application of mathematical, logical and statistical methods, and one 3-hour course devoted to a conceptual and practical understanding of statistical inferential reasoning.

IV. Students will demonstrate an understanding of the complexities of citizenship and the process for making informed choices as engaged citizens in a diverse, multilingual world. [6 credit hours]

Students will recognize historical and cultural differences arising from issues such as ethnicity, gender, language, nationality, race, religion, sexuality, and socioeconomic class; students will demonstrate a basic understanding of how these differences influence issues of social justice, both within the U.S. and globally; students will recognize and evaluate the ethical dilemmas, conflicts, and trade-offs involved in personal and collective decision making. Students will take two courses, each with a topical or regional focus. The first course will include critical analysis of diversity issues as they relate to the contemporary United States. The second will be a non-US based course that includes critical analysis of local-to-global dynamics as they relate to the contemporary world. In addition, each course must address at least 2 of these 4 topics: societal and institutional change over time; civic engagement; cross-national/comparative issues; power and resistance.

The Curricular Framework and Relationship to the Learning Outcomes

Students must take one course from each of the areas listed below in order to complete the UK Core. A course taken to satisfy a requirement in one area of the UK Core cannot be used to satisfy a requirement in another area, even if a specific course is present in more than one area (e.g., some courses are designed to meet the learning outcomes in more than one area).

| Course Areas by Learning Outcome | Credit Hours |
|--|---------------------|
| Learning Outcome I: Intellectual Inquiry | |
| The Nature of Inquiry in Arts and Creativity | 3 |
| The Nature of Inquiry in the Humanities | 3 |
| The Nature of Inquiry in the Social Sciences | 3 |
| The Nature of Inquiry in the Natural, Physical and Mathematical Sciences | 3 |
| Learning Outcome II: Written, Oral and Visual Communication | |
| Composition and Communication I | 3 |
| Composition and Communication II | 3 |
| Learning Outcome III: Quantitative Reasoning | |
| Quantitative Foundations | 3 |
| Statistical Inferential Reasoning | 3 |
| Learning Outcome IV: Citizenship | |
| Community, Culture and Citizenship in the USA | 3 |
| Global Dynamics | 3 |
| UK Core Credit-Hour Total* | 30 |

**The UK Core is designed to provide the equivalent of 30 credit hours. Some courses in the UK Core require more than three credits, resulting in more than 30 credits in some cases.*

Check the most up-to-date list of approved courses at: http://www.uky.edu/ukcore/Course_Listings

UNIVERSITY SCHOLARS PROGRAM IN CIVIL ENGINEERING

The University Scholars Program in Civil Engineering is a combined BSCE – MSCE program for our most gifted and highly motivated students. 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. There is an excellent possibility that scholarships will be available for students who qualify.

The program offers several advantages to the students. First, it provides the coherence and efficiency of a single, planned, undergraduate – graduate program. This will require comprehensive advising and closer involvement with supervising faculty members. Due to the high caliber of the students admitted into the program, the course work requirements for the masters (MSCE) degree may be reduced by up to six semester hours. In addition, the University Scholars will be widely recognized as our best and brightest students, and the Department will make every effort to obtain at least partial scholarships for all participants. Finally, the students will be encouraged to become involved in the work of faculty advisors or industrial sponsors as soon as possible after their selection for the program.

Students may apply for entry to the program after completing at least 105 credit hours of the undergradu-

ate Civil Engineering curriculum. No less than 30 of these credit hours must be in CE prefix courses. The students must also have an overall undergraduate GPA of 3.2 or greater; a GPA of 3.5 or greater for all CE prefixed courses, and nearly completed the University General Education requirements 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.

Both the thesis and the non-thesis options of the MSCE program are available. Students choosing the thesis option will have to complete 24 graduate credit hours, six hours of which can simultaneously be used to satisfy the BSCE degree requirements resulting in an increase of only 18 credit hours above the BSCE degree requirements. At least 9 of these hours must be at the 600 or 700 level. In addition, these students must write a thesis, and while doing thesis work, they must register for three credit hours of CE 768. The Graduate School for bookkeeping purposes imposes this last requirement.

Students choosing the non-thesis option typically will have to complete 30 graduate semester credit hours, six hours of which can simultaneously be used to satisfy the BSCE degree requirements resulting in an increase of only 24 credit hours above the BSCE degree requirements. Of these additional 24 credit hours for the MSCE degree, 12 hours must be at the 600 or 700 level. In addition, non-thesis students must demonstrate that they have completed three semester credit hours of independent study via the 24 graduate credit hours. This is done in consultation with your academic advisor and is normally handled by choosing appropriate graduate level classes. However, student's can also register for either CE 790 – Special Research Problems in Civil Engineering or CE 791 – Special Design Problems in Civil Engineering for 1 – 6 credit hours. Students who are interested in becoming University Scholars should see the Director of Graduate Studies as early in their academic careers as possible.

WAIVER OF REQUIREMENTS

Degree requirements (as identified in the sections on CURRICULUM and DEGREE REQUIREMENTS) may be waived only by the Department Chair upon advice of the Director of Undergraduate Studies, and subject to approval by the Dean of the College of Engineering. Individual requests for waivers, other than those specifically identified in this Handbook, should be addressed to the Director of Undergraduate Studies.

Nonacademic experience is not an acceptable substitute for a course requirement. However, such experience may be used as evidence of qualifications to take a special examination for credit providing such an examination can be arranged (see SPECIAL DEPARTMENTAL EXAMINATIONS).

WITHDRAWAL FROM A COURSE

A student may withdraw from any class before the end of the eleventh week in academic semester; for summer sessions refer to the schedule of classes book for the four-week, six-week, and eight-week sessions. Any student withdrawing during the first three weeks of the course shall be removed from the class roll, and no grade or record of enrollment shall appear on the student's transcript. Any student withdrawing after the first three weeks of the course shall receive a grade of W.

A student may withdraw from class following the eleventh week upon approval by the dean of the student's college. Such permission requires a petition certifying urgent non-academic reasons, including but not limited to: 1) illness or injury of the student; 2) serious personal or family problems; or 3) serious financial difficulties. Before acting on such a petition, the dean will consult with the instructor of the class and the Department Chair. If the dean of the student's college approves the petition, the dean shall so inform in writing the instructor of the class, and the student shall be assigned a grade of W.

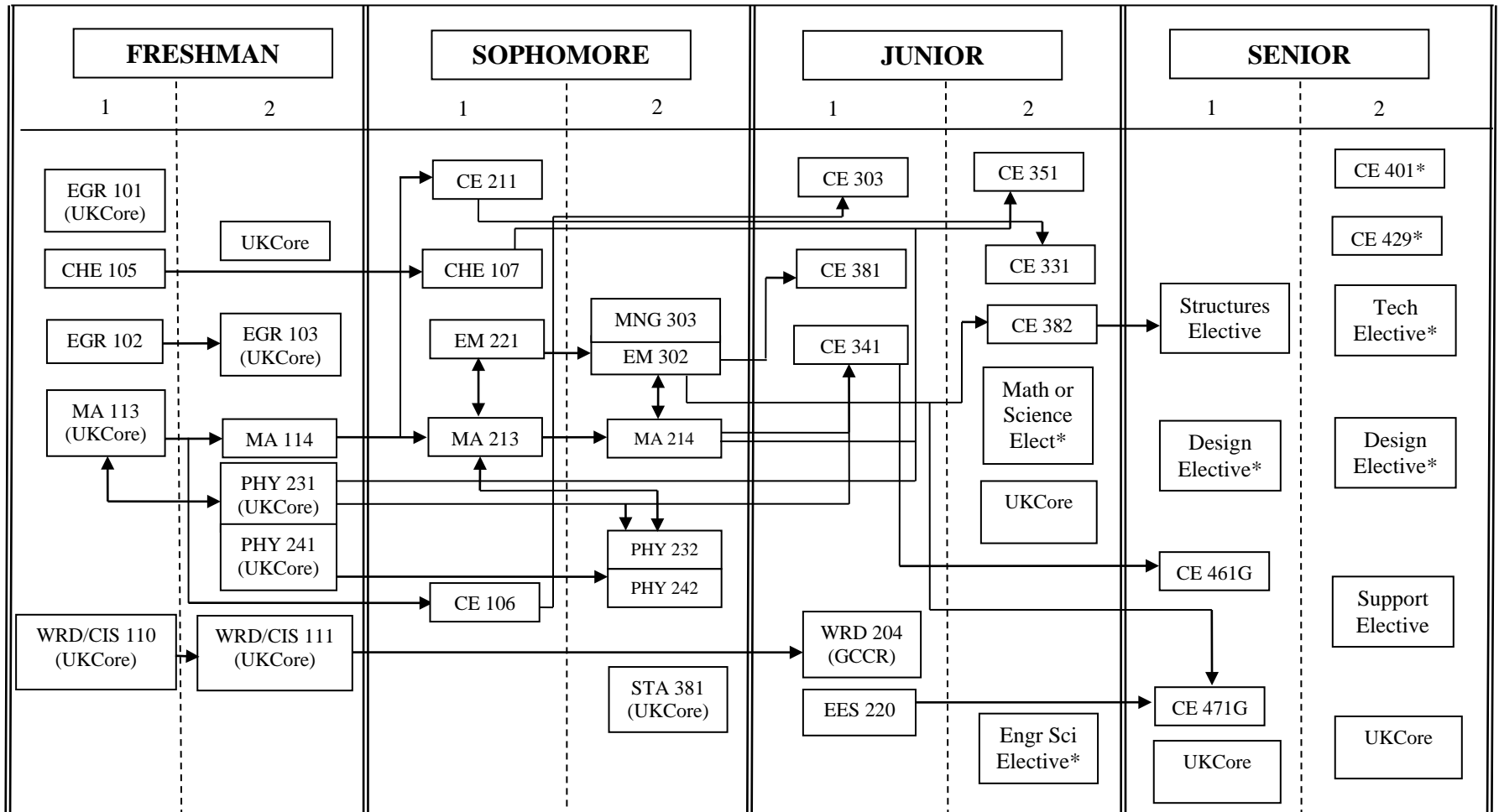
WITHDRAWAL FROM A COURSE (FORCED)

Students who miss the first two class periods of a course may be reported to the departmental Student Records Secretary. The Secretary will drop the student from the course. Students may also be dropped from a course if they have not completed the required prerequisites or if they have excessive absences.

WITHDRAWAL FROM THE UNIVERSITY

Any student wishing to leave the University during the term for any reason must withdraw officially. Otherwise, the grade of "E" may be recorded in each course. This will jeopardize the chances for readmission. Withdrawing students should go to the Registrar to obtain official withdrawal instructions and to determine if they are entitled to a refund of a portion of the fees.

B.S.C.E. CURRICULUM FLOWCHART WITH PRE- AND CO-REQUISITES



* See Course Description for list of pre- and/or co-requisites

→ ≡ pre-requisite course

↔ ≡ lower numbered course is a pre- or co-requisite