

KU Bachelor of Science in Architectural Engineering Undergraduate Guide

This KU BS ARCE Undergraduate Guide presents the faculty's curriculum policies and details that should help you complete the curriculum efficiently. If you have corrections or suggestions for future editions of this Undergraduate Guide please forward them in writing to the Professor tom Mulinazzi in 2150 Learned Hall.

PROGRAM ADMINISTRATION

Your admission was handled by the School of Architecture and Urban Design because there are limited spaces in architectural studio courses. If you were admitted without a confirmed studio space, Professor Michael Swann, associate dean of SAUD, or Gera Elliot, Architecture admissions coordinator, will inform you when one becomes available. The dean of the School of Architecture and Urban Design is John C. Gaunt, FAIA.

After admission, your progress is overseen by the architectural engineering faculty, the Department of Civil, Environmental and Architectural Engineering, and the School of Engineering. For example, after you see your advisor in Architectural Engineering each semester you will then submit your advising form to Carol Jo Sloan, in 2150 Learned Hall, to have your advising hold released. This release is required for you to enroll online for the next semester or summer session.

Your final degree-requirements check also will be performed by the School of Engineering. The Dean of the School of Engineering is Stuart R. Bell, Ph.D., P.E. When visiting the Engineering Dean's Office at 1 Eaton Hall, you will likely interact with Marilyn Greathouse, receptionist; Ann Phillips, academic services director; or Robert M. Sorem, Ph.D., associate dean for undergraduate studies).

Day-to-day administrative duties are handled by your program's faculty and staff. However it is your responsibility to know and follow all the rules and policies of the University, the School of Engineering, the School of Architecture and Urban Design, the CEAE Department, and the ARCE Program. For example make sure that you meet the required deadlines for advising, enrollment, tuition and fee payments, and graduation. You can find these various rules and policies from sources such as the University's Undergraduate Catalog (via www.ku.edu or offices in Strong Hall), the on-line Timetable of Classes (www.timetable.ku.edu), the School of Engineering's Undergraduate Student Handbook (www.engr.ku.edu or 1 Eaton Hall), the School of Architecture and Urban Design (www.saud.ku.edu or 206 Marvin Hall), the Department (www.ceae.engr.ku.edu or 2150 Learned Hall), and the Program (Learned Hall).

Summary of Significant Events Toward Your Bachelor's Degree

- Be admitted to the BS ARCE program by the School of Architecture and Urban Design
- Attend a summer orientation session (optional, but strongly recommended)
- Be advised and enroll for each semester
- Maintain a good GPA
- Select an area of emphasis as described later in this Guide
- Join the umbrella Architectural Engineering Institute (optional, but recommended)
- Join your emphasis' professional society (optional, but strongly recommended)
- Join honor societies (optional, but strongly recommended if invited)
- Explore summer engineering internship opportunities (optional, but recommended)

- Submit an Application for Degree (AFD) on-line during the advising period before the semester that you plan to graduate. Hardcopy AFD cards are available from, and are submitted to the Engineering's Dean's Office, 1 Eaton Hall.
- Take the Fundamentals of Engineering (F.E.) Exam no later than the semester before your last semester (required no later than ARCE 680)
- Take the Graduate Records Exam (GRE) early in the semester before your last semester (recommended to keep graduate study as an option)
- Apply for Graduate School or seek employment in your last year (optional)
- Complete your course requirements (last 30 credit-hours must be at KU)
- Attend the Engineering and Architecture graduation events (optional)
- Walk down the hill in the University's May graduation ceremony (optional)
- Give the KU Alumni Association your forwarding address (optional)

Congratulations. You are now one of our valued alumni!

BS ARCE DEGREE REQUIREMENTS

To obtain your Bachelor of Science in Architectural Engineering (BS ARCE) degree you must complete at least 165 credit-hours of coursework. On this www.arce.ku.edu Web site are the current BS ARCE curriculum and lists of elective courses. While you are encouraged to keep on track, studies have shown that less than 10% of students in all programs follow curricula exactly. Individuals' circumstances often result in deviations from the predefined, semester-by-semester BS ARCE curriculum presented in this Guide -- for example you may already have some transfer credit. You will work closely with your advisor each semester to optimize your course selections.

You are required to complete the courses listed in the curriculum under which you were admitted or readmitted. However, as the profession changes, the faculty may adjust the curriculum. You can choose to complete your degree under either a revised or your original curriculum, as long as you remain continuously enrolled. The faculty are always interested in your suggestions and post-graduation experiences that would be helpful in future revisions of the curriculum.

Advising

You will receive enrollment information for each upcoming semester via e-mail. Be sure that KU has your current e-mail address, phone number, and local and permanent postal addresses, and check for mail and messages frequently! You can update your contact information at 121 Strong Hall or on-line via www.registrar.ku.edu/online/. Print two blank copies of the School of Engineering Academic Program Planning Form, and bring them with you to each advising session.

The CEAE Department schedules two weeks per semester for advising appointments, so when you receive your enrollment instructions from KU you must come to Learned Hall to sign up for a time slot with your assigned advisor. The advising period for the spring semester is usually near Fall Break. The advising period for the summer session and fall semester occurs near Spring Break.

Check the list posted outside 2150 Learned Hall to see if your advisor has changed. You must see your assigned advisor but you can request a different one if, for example, you change your area of emphasis. Request a change of advisor via Ms. Sloan in 2150 Learned Hall.

Before you meet with your advisor each semester you should review this Guide, your Academic Records Tracking System (ARTS) form, and the current Timetable of Classes (www.timetable.ku.edu) to refamiliarize yourself with your degree requirements, and to

determine what courses are being offered. Work out a rough schedule and a couple alternative courses on one of your planning forms, and bring it and a blank spare with you to your appointment. Be sure that you have completed all prerequisites before attempting a course. Your advisor should already have your advising folder during the designated advising periods. After you and your advisor meet and have selected appropriate courses, fill out your final planning form in ink. After both you and your advisor have signed and dated the form, give it to Ms. Sloan in 2150 Learned Hall to have your advising hold released soon thereafter. Your advisor will retain your folder.

If you miss your advising appointment, sign up for another time slot during that advising period. Don't wait until the last minute for advising because you may not complete the required steps before your on-line enrollment time. If you need to see your advisor to modify your enrollment after the advising period or for other reasons, check his or her door for established office hours.

To speed your graduation, and/or to lighten your fall/spring course loads, give serious consideration to completing a summer session or two at KU. Chemistry, Physics, English, elective, and lower-level engineering courses are usually offered. Architecture (ARCH) may offer desired courses as well such as ARCH 300 or 301.

BACHELOR OF SCIENCE IN ARCHITECTURAL ENGINEERING

Current curriculum guides for Architectural engineering may be found on the CEAE Web site.

ENGINEERING AND OTHER ELECTIVE COURSES

English Requirements

BS ARCE students are required to complete six credit-hours of English, and for most it will be through completion of ENGL 101 and ENGL 102. But if you have advanced placement into ENGL 102 or 105 you will still need to complete another three credit-hour English course. If you have credit for ENGL 102 you may not take ENGL 105 as your second required English course; the ARCE Program requires ENGL 362, Technical or Business Writing. All students, including international, must complete at least one required English course each semester until their requirements are fulfilled.

Mathematics Requirements

The BS ARCE mathematics requirements are successful completion of MATH 121, MATH 122, MATH 220, MATH 290, and CE 625 (Applied Probability and Statistics, or MATH 526). These requirements apply to new as well as transfer students. Those students not eligible for MATH 121 have an additional course requirement of MATH 104. If not ready for MATH 104, the student must first complete MATH 101. It is recommended that one MATH course be taken each semester until all are completed through CE 625.

MATH 115 and 116 are lower-level calculus courses taken by business, architecture, and other students in many academic programs. MATH 121 and 122 are more rigorous calculus courses taken by students majoring in engineering and science. Previously, MATH 115 and MATH 116 were allowed as substitutes for MATH 121 in ARCE. Years of experience have shown that students are better prepared for MATH 122, and their engineering courses, if they complete MATH 121. For this reason the MATH 115 and MATH 116 option in ARCE has been eliminated. Students with transfer credit in MATH 115, or 115 and 116, must enroll in MATH 121. New students qualified for MATH 115 but not MATH 121 can either complete MATH 104 or MATH 115, but are still required to take MATH 121, MATH 122, MATH 220, MATH 290, and MATH 526 or CE 625.

Similarly MATH 123 and MATH 320 in the past were allowed as substitutes for MATH 250/ENGR 250 (now MATH 220 and 290) and MATH 526/CE 625. Again, experience has shown that MATH 220/290 and MATH 526/CE 625 are a better combination; the MATH 123 and MATH 320 option has been discontinued.

The honors versions of the required MATH courses can be completed instead. For example, honors MATH 141 and 142 may replace MATH 121 and 122. Verify the appropriate honors courses with your advisor and the Honors Program in advance.

Physics and Chemistry Requirements

Your physics and chemistry requirements are completion of PHSX 211, PHSX 212, and CHEM 184. New students must complete PHSX 211 and PHSX 212. Transfer students who have credit in PHSX 114 with a grade of "B" or higher may proceed directly to PHSX 212. However, such students should decide in their first couple days of class whether it is to their advantage to complete PHSX 211 before proceeding to PHSX 212. It is important that you complete CHEM 184 too before taking the F.E. exam.

Basic Science Elective

The BS ARCE curriculum includes a three credit-hour elective basic science course, and some popular selections are shown on a page higher up in this Web site. These courses have an "N" in the "General Course Designator" portion of the Timetable, but mathematics and computer science N courses are not accepted. Students pursuing the Structural or Construction emphasis should take a geology course. Those students interested in the Building Environmental Systems emphasis should take EVRN 148 or ATMO 105.

Humanities and Social Sciences Requirements

Your BS ARCE curriculum requires 15 credit-hours of humanities and social sciences courses. Humanities courses are designated with an "H" or "WH" and social sciences courses have an "S" in the Timetable of Classes. The School of Engineering requires that you take at least one H and one S course. The architectural history courses ARCH 640, 641, and 642 count as nine credit-hours of humanities and fulfill the "depth" requirement of the School of Engineering. You should complete your architectural history courses in order, i.e. 640, 641, and then 642. Your remaining six hours of H and S electives may be from any department, but you need to complete at least one humanities and one social science course to fulfill the School's H&S "breadth" requirement.

COMS 300 (1 credit-hour S) may not be taken for degree credit by engineering students. Also, "N" or "U" courses may not be used to fulfill your humanities and social sciences requirements. An exception is that a "U" spoken foreign language course can be used as your humanities elective if you are not a native speaker of that language. Students planning to study abroad in a non-English speaking country should consider this foreign language option.

Professional Skills Elective

The BS ARCE curriculum includes three hours of non-ARCE/CE "breadth" electives intended to enhance your professional development. Technical Writing (ENGL 362) or Speech/Communication (COMS 130 or 150) is highly recommended because most engineering employers cite these two topics as weaknesses in engineers nationally.

Shown on Page 8 of this Guide is the full list of approved professional skills electives, but you can submit through your ARCE advisor KU courses that you think should be added to the list. Additions will be considered at a later faculty meeting. You may also submit a course substitution

petition via your advisor to the Department's Chair and the SoE's Associate Dean. For approval, such a substitution must meet the intention of the Professional Skills Elective.

Architectural Studio Requirements

You will complete ARCH 113, 114, 200, and 201 as part of your BS ARCE. If you are considering continuing your studies toward an architecture degree at KU, you should probably also complete ARCH 300 and 301 after consulting with an architecture advisor. Three of the six credit-hours of ARCH 300 will fulfill the "professional skills" elective requirement in your BS ARCE curriculum. You might consider attending a summer session to complete other courses so that you can take ARCH 300 in a fall semester and 301 in a spring, but the SAUD has recently begun offering ARCH 300 and/or 301 during the summer sessions too. If you have a light course load in your last undergraduate semester and you have been admitted to the Master of Architecture or any other graduate program at KU, you may be able to reserve up to six credit-hours of extra coursework toward your graduate degree. You must apply to the Graduate School, in advance, to have these extra courses reserved for graduate credit.

Programming and Drafting Courses

EECS 138 is the required computer-programming course; C++ or FORTRAN is recommended. Learning to program allows you to logically break a large problem into smaller, more solvable ones; programming is also required in some higher-level undergraduate and many graduate engineering courses.

Computer-aided design and drafting (CADD) skills are needed in ARCE 680 and other courses; ARCE 217 is the required introductory course. Primarily 2-D skills are needed, but some 3-D work may be needed too in ARCE 680 or other courses.

Engineering Sciences Requirements

Your required engineering science (ES) courses are ARCE 217, ARCE 350, CMGT 357, ARCE 660, CE 301 (or CE/ME 201 + CE 300), CE 310, CE 461, EECS 211 (being replaced by 315), ME 312, and ME 510 (or CE 330). You also have a three credit-hour engineering science elective course; suggested engineering science electives for your area of emphasis are available on the CEAE Web site. It is to your advantage to have all your engineering science courses completed before you take the Fundamentals of Engineering exam, typically in your fourth year.

If CE 301 (Statics and Dynamics) does not fit in your schedule, you may substitute CE or ME 201 (Statics) and CE 300 (Dynamics). It is important to complete Statics early because it is a prerequisite for CE 310, Strength of Materials. CE 330 (Fluid Mechanics) has Dynamics as a prerequisite; ME 510 (Fluid Mechanics) requires Thermodynamics.

Engineering Design Requirements

Your required engineering design (ED) courses are ARCE 103, CMGT 400, CE 562, CE 563, ARCE 642, ARCE 645, ARCE 661, ARCE 680, and ARCE 681. Additionally, you have six credit-hours of engineering design elective courses; suggested engineering design electives for your emphasis are available on the CEAE department Web site.

ARCE 680 and 681, Architectural Engineering Design I and II, have prerequisites of CMGT 400, ARCE 642, 645, and 661, as well as CE 562 and 563. You should also have substantial CADD and plotting skills, either through coursework (e.g., ARCE 217) or work experience before enrolling in ARCE 680. In taking your engineering science and design courses, be aware that you will need to apply the knowledge you gain in these courses to realistic design problems in ARCE 680 and 681. In ARCE 680, all students will complete structural, mechanical, illumination, and

power systems analyses and designs. In ARCE 681, three separate sections are usually offered: 1) structural, 2) construction (CMGT), and 3) environmental (MEP/EM/FPE).

With permission of the specific ARCE 681 instructor, final year students who have completed the other prerequisites may take ARCE 681 before 680 if doing so will allow them to graduate a semester sooner. For students who have a delayed architectural studio sequence, it is possible to take ARCH 200 and ARCE 680, or ARCH 201 and ARCE 681, in the same semester if the meeting times do not conflict.

OTHER TOPICS OF INTEREST

Course Load

Full-time status during a fall or spring semester usually requires enrollment in 12 credit-hours or more for undergraduates. To complete your degree in 10 semesters, you must successfully complete an average of almost 17 credit-hours per semester. If you will be employed or have other significant time commitments, you will likely need to reduce your course load. A general guideline is that three times your course credit-hours plus your work hours should be less than or equal to 60.

Many courses are offered in the summer at KU and can help you to graduate earlier or to lighten your fall/spring enrollments. A full-time summer course load, with no concurrent employment, is about 8 credit-hours.

Special permission is required in advance for an undergraduate to take an 800-level course. Also, students in their last semester who are entering a graduate program can petition the Graduate School to take up to six extra credit-hours of graduate-level courses and reserve them for graduate credit.

Minimum Course Enrollments

The University at one time briefly enforced a policy that at least twelve students be enrolled in predominately undergraduate courses and six students in primarily graduate courses for the courses to proceed. Should a course be canceled, see your advisor immediately to drop the course and to add a suitable replacement.

Course Grading

In accordance with the University Senate Regulations, the letter grades A, B, C, D, F, and I are used for final grades in ARCE, CMGT, and CE courses. Pluses and minuses are not assigned in our courses as they are for Architecture (ARCH) and Urban Planning (UBPL) courses. However, when you take a course in a department that uses the +/- system, you will be graded in that course using the +/- system. Letter grades are defined by the university as:

"A" For work of marked excellence, indicating high honor.

"B" For work much more than average quality.

"C" For work of average quality.

"D" For work of the lowest quality that would enable the student to pursue, without undue lack of material or method, the next dependent course, whether this latter course be in the same department or in a related department.

"F" For work not of sufficiently high quality to merit credit for the course.

"I" Indicates that the student did not complete the work in that course by the designated date.

Architectural Engineering students are not required to retake courses in which they receive a D unless a higher grade is a prerequisite for another required course.

Credit/No Credit

No courses that count toward the BS ARCE may be taken as Credit/No Credit. One course per semester not counted toward the BS ARCE may be taken as Credit/No Credit. Students taking extra courses toward an M ARCH or any other degree should check with the degree-granting program to determine if they accept Credit/No Credit grading for their required courses.

Adding and Dropping Courses

To add or drop courses after the initial open on-line add/drop period, get the appropriate forms from Ms. Sloan in 2150 Learned Hall and complete the forms in ink. Obtain your advisor's signature during his or her office-hours, then proceed to Strong Hall's Enrollment Center.

The various professional Schools (Engineering, Architecture and Urban Design, Business, etc.) and the College of Liberal Arts and Sciences generally define three "drop periods" in each semester. Each of these drop periods usually has different requirements and restrictions. For a specific course, the rules of the School or College offering that course may apply. The deadlines and other restrictions may also vary from semester to semester and from School to School.

ARCE and CMGT courses are governed by the drop policy of the School of Engineering, and not the School of Architecture and Urban Design. In summary, the School of Engineering's rules for the three drop periods are:

First period: The course is removed from the student's record. Second period: The student receives a W or F, at the instructor's discretion. Third period: An approved petition is required that documents an acceptable reason for dropping a course. Only catastrophic events beyond the student's control that occur late in the semester will be considered. Poor academic progress is not an acceptable reason for a petition. If approved, a W or F is assigned.

The KU Undergraduate Catalog, the Timetable of Classes, and the School of Engineering's Undergraduate Student Handbook have more detailed information about dropping courses.

Academic Misconduct

ARCE students and faculty are subject to the academic misconduct policies found in the Timetable of Classes and elsewhere. Instructors and students report incidents of academic misconduct to the CEAE Department's Chair. The Chair forwards this information to the School of Engineering's Dean.

Some examples of academic misconduct by students include copying on exams or homework that are to be completed individually, improper reuse of previous work (plagiarism of written materials, software, or drawings), or altering enrollment forms or other records. If you find yourself in a questionable situation ask your instructor or advisor for guidance. Engineering ethics require that you report known incidents of academic misconduct either by students or faculty. Dealing with such problems early, tactfully, and with reasonable privacy is the best approach to resolving them.

Study Abroad

Students are encouraged to take advantage of the study abroad opportunities offered by the various schools and the University. Many ARCE students have studied abroad for up to a year. "Building Services Engineering" programs at European and Australian universities are somewhat comparable to our Building Environmental Systems (MEP/EM/FPE) emphasis in ARCE. Study of structures is usually part of civil engineering programs in Europe. However, due to different

course offerings, course dates, and incomplete transfer of credit, your graduation from KU may be somewhat delayed if you study abroad. You should start planning for study abroad at least one year in advance, and you need to be fluent in the language of instruction.

Honors Program

Qualified students are encouraged to participate in KU's Honors Program. However, obtaining enough credit-hours has been difficult for engineering students as relatively few honors courses have been offered in the School. More information can be found in the KU Undergraduate Catalog and via the Honors Program's Web site, or at their office in the Nunemaker Center, 1506 Engel Road.

Edwards Campus Courses

Some higher-level engineering electives and other courses are offered at the Edwards Campus of KU in Overland Park, KS. If you enroll in a course at the Edwards Campus you will need reliable ground transportation. Also, the tuition and course fees are significantly different for the Edwards Campus than for the Lawrence Campus, so plan accordingly.

Engineering Fees

A special course fee is collected per credit-hour for all engineering courses. These funds are pooled and used to acquire instructional equipment and services. The SAUD has recently instituted a support fee for its courses too.

Examples of equipment purchased with your engineering fees include some of the computers, printers, and software located on the bridge between Marvin and Art & Design, 305 Marvin Hall, 1137 Learned Hall (ARCE Senior Studio), and in various Learned and Eaton Hall labs. If you have an idea for an appropriate use of these collected fees, please forward a short memo or e-mail to your ARCE advisor describing your suggestion.

Reciprocity

Eligible residents of Missouri in our BS ARCE program should apply each semester for tuition reduction through the annually-reviewed Kansas-Missouri reciprocity agreement. This agreement allows a varying number of Kansas residents to study dentistry in Missouri at in-state tuition rates too. You can obtain the necessary tuition-reduction request form from Gera Elliot in 205 Marvin Hall.

Computers

Most of the faculty and students in the two schools use MS Windows personal computers and software. While microcomputers, printers, and software are provided at various locations in the department, the School of Architecture and Urban Design, the School of Engineering, and the university, many students purchase their own. If you are considering the purchase of a new personal computer, first determine what hardware and software you will need for your courses. An "office suite" of wordprocessing, spreadsheet, and presentation software may be sufficient for your first semester or two; acquiring a CADD license in advance is not recommended as they tend to be expensive and versions change rapidly. AutoCAD is installed on PCs in many of the ARCE, SoE, and SAUD computer labs.

E-mail and SoE Accounts

As soon as possible sign up for a free KU e-mail account online via <http://www.cc.ku.edu/account.htm>. Choose a logical user name (e.g. Bob Smith would probably use "bsmith") and a desired initial password. Your final e-mail address will then be something

like "bsmith@ku.edu." Avoid using a nickname for your e-mail address as some recipients may consider your messages to be unidentifiable spam.

There are many computers on campus where you can access your e-mail using a web browser or a freestanding e-mail program. If you plan to access your account via your off-campus home computer's modem, you will also need a KU terminal server account or an account with a private ISP company. The KU Computer Center charges a fee for its terminal server accounts, currently about \$35 per semester plus extras. Most KU-owned student housing units provide Internet access.

Also sign up for access to the School of Engineering's computers and network. Accounts are obtained in person at 3002 Learned Hall. For questions regarding these accounts, visit the School of Engineering's SOECS Web pages or stop by 1132 Learned.

World-Wide Web Home Pages

You can create and then store a personal home page using your KU e-mail server account. Academic Computing Services offers regular seminars on how to create home pages using the Hyper-Text Markup Language (HTML); visit www.ku.edu/computing/ for details. The Department has a Web site with the uniform resource locator (URL) <http://www.ceae.ku.edu/>, and the ARCE Program's portion can be access directly via <http://www.arce.ku.edu/>. The Department's Web site is only for distributing lasting information about our programs and student organizations -- links are not provided to personal home pages. If your student group's home page needs updating, see the organization's President or faculty advisor to volunteer.

Student Organizations

You are encouraged to participate in the various student organizations associated with the Program, the Department, the two Schools, and the University. However, be careful not to over_commit yourself -- your undergraduate studies should command a large portion of your time and energy.

The Architectural Engineering Institute (AEI) is the umbrella organization for ARCEs. Specialty organizations are the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), KU Constructors (AGC+NECA), and the Illuminating Engineering Society of North America (IESNA). Phi Alpha Epsilon is the national architectural engineering honor society, and Tau Beta Pi is the national and school-wide engineering honor organization. Membership in one or more of these organizations as a student is usually low in cost, can help you build contacts in your field ("to network"), and can enhance your resume.

Personal Library

You should retain all your texts, reference books, electronic media, handouts, and class notes to build a personal library. You should also regularly add to and update your library. By doing this you will significantly reduce the time you spend visiting libraries or surfing the web to secure references. By being a student member of various professional organizations you can usually obtain many otherwise expensive publications at substantial discounts. For example, the four volumes in the ASHRAE Handbook are available to student members at about a 70% discount.

Summer Employment

A student who completes his or her BS ARCE in five years will have four summers where valuable work experience can be gained. The ARCE faculty recommends that you seek summer positions that will give you "real-world" construction and engineering design experience. Working on job sites a helper for your first couple of summers will expose you to many design, construction, code, and safety issues facing construction personnel. Working another summer as a

CAD operator will hone your computer skills. Your last summer or two as an undergraduate should be spent as a design intern in a consulting engineering firm, as a construction management intern, or as an undergraduate research assistant (UGRA). Internships allow you to gain actual work experience but also give your employer a chance to evaluate you before committing to hire you permanently. Prof. Medina is the department's internship opportunities coordinator. A research assistantship introduces you to topics that may be pursued in graduate studies. Ask the department's Graduate Adviser, Prof. Bruce McEnroe in 2150 Learned, for information about research projects that may need UGRA help.

Employment Placement Services

The School of Engineering offers placement assistance through its Career Services Center in 1001 Eaton Hall. Larger manufacturing and engineering companies offer on-campus interviews through the Career Services Center, but most of ARCE students seek summer and permanent positions directly from employers too. You are encouraged to use the Center and attend its Career Fairs, but your ARCE 681 instructor and/or academic advisor can likely help put you in direct contact with potential employers. Depending on economic conditions, you should begin your permanent employment search around the beginning of your last year of study. Start by developing a highly-refined resume and then networking via your professional society.

Professional Engineering Registration

You are encouraged to pursue registration as a Professional Engineer (P.E.). As of this writing, registration in the State of Kansas requires at least:

- A. an ABET-accredited Bachelor of Science in Engineering,
- B. passage of the Fundamentals of Engineering Exam (F.E., formerly E.I.T.),
- C. four years of engineering experience under the direct supervision of a registered Professional Engineer, and
- D. passage of the Principles and Practices Exam (the "P.E. exam").

Your Bachelor of Science in Architectural Engineering degree is an ABET-accredited degree. You are strongly encouraged to take the F.E. exam immediately after completing your engineering sciences and other covered topics; taking or previous passage of the exam is a requirement of ARCE 680. Several months are needed for your exam to be graded, and you would like to tell a potential employer that you have passed, so plan accordingly. The F.E. and P.E. exams are commonly offered in April and October of each year, but have deadlines for application some months in advance.

Seek a permanent position where you will work on engineering projects with increasing personal engineering responsibility; beware that some activities, such as construction, normally don't qualify. You also must work under the direct supervision of a P.E. to fulfill the experience requirement; check to make sure that you will be. Additionally, you will need letters of reference from at least two other Professional Engineers. Be sure to keep these other P.E.'s informed of your engineering activities during your four-year internship.

To help prepare for the mechanical, electrical, civil/structural, or architectural P.E. exam you should take as many engineering courses in one of these emphases as possible. Even after graduation you may want to complete extra courses to improve your performance on the P.E. exam. Some relevant CE, ME, EECS, and other courses are offered at KU's Edwards Campus in Overland Park, as well as in Lawrence.

You can obtain information on current Kansas registration requirements, procedures, and examinations from the Kansas State Board of Technical Professions via their Web site at www.kansas.gov/ksbtp/, by mail at 900 SW Jackson Street, Suite 507, Topeka, Kansas 66612-1257, or by calling (785) 296-3053. Information about the Fundamentals of Engineering Exam may also be available at the School of Engineering's Dean's Office, 1 Eaton Hall.

Graduate Study in Engineering

Your undergraduate education in architectural engineering should prepare you for a fruitful entry-level position and career. However many students desire and seek a higher level of formal education, and some engineering positions, especially in structural engineering, require advanced degrees. Earning KU's Master of Science in Architectural Engineering (MS ARCE), either directly after your bachelor's degree or after working for some time, will allow you to study in depth an area of specialization. The MS ARCE program is also open to graduates of other engineering disciplines who wish to pursue careers related to buildings. An MS can usually be completed in one or two years of full-time study. Our Master of Construction Management (MCM) is offered too on the Lawrence Campus, however it is not an engineering degree -- so to consider earning the MS ARCE with a construction emphasis if a graduate engineering degree is desired.

If you are interested in a career in engineering teaching and/or research, then you should earn both a Master of Science (with thesis) and a Doctor of Philosophy (Ph.D.) in engineering. Obtaining such degrees is a challenging and intellectually rewarding experience. If you seek both degrees, you should plan for at least five years of full-time, rigorous study past your bachelor's degree. To enhance your probabilities for admittance to and success in an engineering Ph.D. program, you should show excellence in completing advanced theoretical and numerical engineering courses in your Master's program.

The Architectural Engineering Program offers a Master of Science in Architectural Engineering degree that requires 30 credit-hours. There are both thesis and report options. Areas of study include Building Environmental Systems, Construction Management, and Structures. Through advanced ARCE and other courses you and your advisor will assemble a graduate plan-of-study that will help you achieve your educational and professional goals. Even if you obtained your undergraduate degree at KU, you will still find many challenges awaiting you in our Master of Science program. You can learn more about our MS ARCE by visiting the graduate studies portions of the ARCE and CEAE Web sites, or by requesting printed information and an application from the CEAE Graduate Advisor. If you are interested in graduate study of structures, investigate KU's Master of Science in Civil Engineering program too. A "professional", NAAB-accredited Master of Architecture is available as well. Many graduate-level CE, ARCH, and Engineering Management (EMGT) courses are offered at the Edwards Campus in Overland Park.

Architectural engineering does not offer a Ph.D. degree, but civil engineering does and ARCE professors may chair or serve on Ph.D. in CE committees. Profs. Rock and Medina are authorized to chair mechanical engineering Ph.D. committees too. If you are considering earning a graduate degree, discuss it as early as possible with your advisor. More information on CEAE graduate degree programs can be obtained from www.ceae.ku.edu in the "Graduate Programs Administration" portion, and the Graduate Advisor, Prof. Bruce McEnroe, in 2150 Learned Hall.

This Undergraduate Guide is intended to help admitted students complete their degree requirements in the University of Kansas Architectural Engineering Program. The Guide is periodically revised. Please forward written comments, suggestions, or corrections for future

versions of this document to Professor Tom Mulinazzi. The rules and policies found in this document do not supersede those of the University, the School of Architecture and Urban Design, the School of Engineering, or the Civil, Environmental, and Architectural Engineering Department.