

Engineering Graduate Catalog (updated 7.30.09)

Admission

Students Not Candidate for Degree

Disability Resources

International Students

Registration

Course Load

Grades

Master's Degree

Doctoral Degree

Transfer Credit

GENERAL INFORMATION: GRADUATE DEGREE PROGRAMS

The School of Engineering offers programs of instruction and research leading to specified master's degrees (Master of Science in..., and Master of...) and to doctoral degrees.

Both full-time and part-time students may pursue most of the graduate programs offered by the School of Engineering. A few graduate programs are designed primarily for full-time students. However, numerous locally employed engineers, scientists, and technical managers have earned master's degrees through part-time study, or have completed significant portions of the requirements for their doctoral degrees while they were part-time students. Many evening graduate courses are offered, and many other graduate courses are taught during the late afternoon. Students who are employed full-time and are interested in investigating the possibility of doctoral graduate work should consult directly with the chair or director of the particular department or program in which they are interested.

Admission

Washington University encourages and gives full consideration to all applicants for admission and financial aid, without regard to race, color, age, religion, sex, sexual orientation, national origin, veteran status, or handicap. University policies and programs are nondiscriminatory.

A student must be admitted to a degree program in the School of Engineering to earn a graduate degree and the student must be admitted at least one semester prior to his or her anticipated graduation semester. Applications for admission to graduate standing should be filed with the School of Engineering well in advance of the student's intended date for registering as a graduate-degree candidate. Applications and more specific information about departments and programs are available online at www.engineering.wustl.edu as well as more specific departmental information. In addition to the application, a student should submit all required supporting documents.

To receive full admission, an applicant who has had no previous graduate work must have a bachelor's degree in an accredited curriculum in engineering, science, or mathematics; must have earned at least a B average during the last two years of undergraduate work; and must have the recommendation of the department or program to which the applicant is applying.

The department or program recommendation will be based on the applicant's potential for success in the proposed course of study. To reach this judgment, the department or program will consider the applicant's undergraduate record, recommendations from former instructors, and if feasible, a personal interview.

All applicants for admission as full-time master's students are strongly *encouraged* to submit Graduate Record Examination General (GRE) test scores (verbal, quantitative, and written analytical). All applicants to doctoral programs are required to submit these scores.

Students failing to meet all of the criteria for full admission (with the exception of international students not residents of the United States at the time of application) may be recommended by the department or program for provisional admission. Students admitted provisionally must demonstrate their ability to pursue graduate work successfully and obtain recommendation for full admission within two semesters. In order to gain full admission, students admitted provisionally must maintain at least a B average in their course work during their first two semesters.

Students Not Candidate for Degree

Students choosing to take a course without applying to a degree program must be admitted to the School of Engineering as a Student Not Candidate for Degree (SNCD). Course prerequisites must be met, and an individual enrolling in a graduate course must typically show proof of a bachelor's degree. A student who registers for courses as an SNCD and later applies for admission to a graduate program in the Sever Graduate School of Engineering will be allowed to count a maximum of nine (9) units taken as an SNCD toward a graduate program, regardless of how many courses taken as an SNCD.

Students wishing to take an undergraduate course under this option must contact the Engineering Registrar's Office at (314) 935-6100. Students wishing to take a graduate course under this option should contact and apply for admission online at www.sever.wustl.edu. For general information on the Graduate Programs offered through the School, please call (314) 935-7974.

Disability Resources

Services for students with hearing, temporary or permanent visual, orthopedic, learning

or other disabilities are coordinated through the Center for Advanced Learning Disability Resources. A student identifying himself or herself as having a disability is voluntary.

To the greatest extent possible, disabled students are integrated as equal members of the total student population. Services provided for disabled students may include but are not limited to: readers, note takers, special parking, tutoring, counseling, appropriate academic accommodations such as alternate testing conditions and referral to community resources. To receive accommodations or services, students must initiate a request for services.

Students with either a temporary or permanent disability may contact the Coordinator of Disability Resources at (314) 935-4062 or visit the website at <http://disability.wustl.edu> or email at cornerstone@wustl.edu. The Center for Advanced Learning Disability Resources is located within Cornerstone in Gregg House on the South 40.

International Students

International students who apply for admission to graduate standing, in addition to the above requirements, must present evidence of financial responsibility and ability to communicate effectively in the English language. To demonstrate financial responsibility, the student must have a bank or similar source send a statement certifying that sufficient funds are available for the first year of study. If the funds being certified are in a sponsor's name, then the sponsor must also provide a letter stating that the sponsor is willing to use these funds to support the first year of study. To prove the ability to use English satisfactorily, the student must pass the Test of English as a Foreign Language (TOEFL) given in other countries by the Educational Testing Service, Princeton, New Jersey 08540 or the website is www.gre.org.

Registration

Consult the University calendar or the School of Engineering's online [academic calendar](#) for the registration deadlines. A late charge of \$100 will apply for each week after the second week of classes. Dates for late registration are also listed in the University Course Listing Book. Registration is not allowed after the third week of classes.

All graduate students in the School of Engineering and Applied Science must register each fall and spring semester until all degree requirements are complete. Students may register in one of three categories:

Active Status: Normally, graduate students must be enrolled each semester in the numbers of units required by their program of study and approved by their advisor and department. A graduate student is normally viewed as having an active full-time status

if enrolled in 9 or more units. A graduate student is normally viewed as having an active part-time status if enrolled in fewer than 9 units. International students on F1 and J1 visas must always register as a full-time student, as per the Office of International Students & Scholars. Graduate students are not allowed to self-register until they have communicated or met with their advisor and their advisor has authorized their registration.

Continuing Student Status: The Continuing Student Status course option may be used when the graduate student needs to maintain his or her full-time status. This option is available to both domestic and international students, contingent upon advisor and departmental approval. A graduate student taking fewer than 9 units will still be viewed as full-time by virtue of the student adding the Continuing Student Status course to his or her schedule. The Continuing Student Status course number is 883 for the Masters student and 884 for the Doctoral student. The course is a 0 unit audit course with no tuition charges associated with it for engineering students.

Nonresident or Inactive Status: Graduate students who do not need to maintain full-time status, and who do not need to register for any course or research units during a given semester should register under the Nonresident/Inactive Status option, but only upon department and advisor approval. Graduate students on an official leave of absence should also register under this status, but they must additionally complete the School of Engineering's Inactive Status Request Form and departmental approval. (NOTE: Ph.D. students in this situation must use Leave of Absence forms or other forms provided by the Graduate School of Arts & Sciences.) A doctoral student wishing to register under a Nonresident/Inactive Status should register using the 886 course number. A masters student wishing to register under a Nonresident/Inactive Status should register using the 885 course number. The course is a 0 unit audit course with no tuition charges associated with it for engineering students. Students registered this way are not viewed as full-time and will not automatically have university health insurance fees or coverage. This registration does not defer student loans, and it does not serve as a legal status for international students. The Nonresident/Inactive Status will assure that the student's email address remains active, and by paying a small additional fee to Olin Library the student can maintain library privileges. This option is normally not available to international students (due to F1 and J1 visa requirements), unless they have plans to exit the country and have received approval from the Office of International Students and Scholars. A Nonresident/Inactive status is generally allowed only for a few semesters at the department's discretion. Any students contemplating a Nonresident/Inactive status must remember to be aware of the residency requirements and the total time limitation required for degree completion.

Students who fail to register as described above may have their graduate standing revoked.

A Master's or D.Sc. student whose graduate standing has been revoked may apply for reinstatement. A reinstatement form should be completed and signed by the student,

his or her advisor and department chair, and then the form should be submitted to the Engineering Student Services Office. The Engineering Registrar, the Department Chair and the Chairman of the Graduate Board will review each application for reinstatement. Students seeking reinstatement may be required to take a special reinstatement examination and to repeat previous work if it fails to meet contemporary standards. Candidates for a doctoral degree who apply for reinstatement may be required to repeat the qualifying examinations. A Ph.D. student should contact the Graduate School of Arts & Sciences for the correct forms and procedures.

Course Load

The normal load for full-time graduate students is 9 to 12 units per semester. The course selection and load must be worked out with and approved by the student's advisor. Graduate students with research and teaching-assistant duties will typically enroll for course loads commensurate with the requirements of these duties. The course load will be determined after consultation with the student's advisor and the person supervising the student's duties as a research or teaching assistant. Students otherwise employed full- or part-time, on- or off-campus, will determine a satisfactory reduced course load with their advisors. International students on student visas are required to maintain full-time enrollment status.

Grades

Graduate work is graded on a scale of A, B, C, D, P, and F (failure), and S (satisfactory), with the auxiliary marks of I (incomplete), X (no final examination), and N (no grade turned in). Audit grades are: L, successful audit and Z, unsuccessful audit. Graduate students must maintain a cumulative grade point average of 2.75 (A=4.0). Individual departments may require a cumulative grade point average greater than the minimum of 2.75. There are no additional grade points for "+" or "-" grades. Grades below "B" are considered unsatisfactory. A grade of "I" in a course other than research must be removed no later than the close of the next semester; if not, the "I" turns into an "F" at the end of the next regular semester after the "I" grade was assigned. Any student receiving an F, or whose semester grade-point average is less than 2.00, is eligible for academic suspension, names are sent to their respective departments for their comments and recommendation before they are automatically dropped from the Graduate program within the School of Engineering. Students dropped because of academic failure may petition the Associate Dean in Engineering Student Services for reinstatement. Reinstatement petitions will be referred to the Graduate Board for review.

If the cumulative grade-point average of a graduate student drops below 2.75, the student is placed on probation. The status of a graduate student who has been on probation for two semesters and has not attained a 2.75 cumulative grade-point average is reviewed by the Graduate Board and the Associate Dean in Engineering Student Services to determine whether or not he or she may continue in the Graduate

program within the School of Engineering.

Master's Degrees (“Master of Science in ...” and “Master of ...”)

Candidates for the master's degrees should note that in most programs both the thesis option and the course option are available. The course option may be of particular interest to part-time students who, because of their employment, might find it more convenient than the thesis requirement. All candidates for the master's degrees should consult with their advisor to determine the option they will follow.

All requirements for the master's degrees must be completed within six years from the time the student is admitted to graduate standing. A maximum of six units of graduate credit obtained at institutions other than Washington University may be applied toward the master's degree awarded by the School of Engineering. Transfer credit must be recommended and approved by the department chair or program director and advisor, as well as by the Engineering Registrar. No courses carrying grades lower than “B” can be accepted for transfer credit.

For the thesis option, a minimum of 24 units of course work and a minimum of six units of research are required. The student must also write a satisfactory thesis prepared under the supervision of a member of the faculty of the School of Engineering. Candidates for master's degrees under the course option must submit a minimum of 30 units of approved graduate course credit. A department may have additional requirements beyond the above stated minimum requirement. Please consult with your advisor as several master's degrees require more than 30 graduate units.

To earn more than one master's degree from the School of Engineering, the student's final program of course work for each such master's degree must include a minimum of 15 units of pre-approved courses not included as part of the final program of course work for any other master's degree awarded by the School of Engineering.

Master's Thesis

A candidate for the degree Master of Science (thesis option) should prepare his or her thesis according to Master's Thesis Format Guidelines which can be downloaded from the Engineering Student Services website.

The candidate's department chair or program director will appoint a thesis committee of three faculty members, with the student's advisor as chair, who will read the thesis and judge its acceptability. At some point, as per published deadlines, the candidate will then deliver a draft copy of the thesis to the Engineering Student Services Office for format approval. Three copies of the final thesis accepted by the committee and approved for format must be delivered to the Engineering Student Services Office no later than the deadline stated in the online academic calendar. In addition, prior to submission of the final hard copies, the student must submit the document

electronically as a PDF file. See the Information for Graduate Students on the School of Engineering website for details.

Master's Final Examinations

The final examination for the Master of Science for candidates under the thesis option consists of an oral examination conducted by the thesis committee and any additional faculty members that the department or program chairman may wish to designate. At this examination the candidate will present and defend the thesis.

Candidates for the Master of Science under the course option may be required to pass a final examination. The form of this examination is determined by the faculty of the area of specialization, and students should consult their advisors, department chairs, or program directors for details concerning this examination.

Doctoral Degrees

Candidates for doctoral degrees should consult their advisors to determine if there are any special regulations or requirements in effect in their particular departments or programs.

Engineering based doctoral degrees require a minimum of 72 units. The doctoral program requires 36 to 48 units of course work and 24 to 36 units of research. The specific distribution decisions are made by the individual programs and departments.

The doctorate can be awarded only to those students whose knowledge of their field of specialization meets contemporary standards. Hence, course work completed more than seven years prior to the date the degree is awarded generally cannot be accepted as satisfying degree requirements. All requirements for the degree must be completed within seven years from the time the student is admitted to the doctoral program.

The doctoral degree has a residency requirement of one year. To satisfy the requirement, the student must devote full time for two consecutive semesters to academically relevant activities on the Washington University campus. A limited amount of outside employment may be permitted, but only with the approval of the department or program chairman and or the Dean of the School of Engineering. Candidates for the Doctor of Philosophy degree are required to follow the guidelines of the Graduate School of Arts & Sciences (GSAS). Please refer to the GSAS website at <http://artsci.wustl.edu/GSAS/> for policies and guidelines for the Doctor of Philosophy degree.

Advisor and Doctoral Committee

Once admitted to graduate standing, each doctoral student will have an advisor appointed by the chair or director of the designated area of specialization. It is the responsibility of the advisor to help the student plan a graduate program.

After the student completes a maximum of 24 units of course work, the chair will appoint a doctoral committee for the student, with the student's advisor normally serving as chair of the committee. The doctoral committee will contain at least three members of the School of Engineering regular faculty. The committee will advise the student on course work and research and must approve the proposed program.

Doctoral Qualifying Examination

To be admitted to a candidacy for the doctoral degree, a student must pass a comprehensive qualifying examination consisting of both written and oral portions. The written portion of the examination is administered by the student's department or program, and students should consult their advisor for information concerning the scope of the examination and the dates on which it is given. Students passing the written portion of the examination are eligible to take the oral portion. The examining panel for the oral portion will consist of the student's doctoral committee, plus additional members recommended by the student's doctoral committee and approved by the department chair or program director. The panel will have a minimum of five to six members, representing two or more departments at Washington University.

Doctoral Dissertation

The candidate must defend the dissertation during a final oral examination by an examining committee to be nominated by the advisor and approved by the appropriate dean. Doctor of Philosophy candidates will have their committees approved by the Dean of the Graduate School of Arts & Sciences. The committee normally consists of five to six Washington University faculty representing two or more departments in the engineering school and requires the approval of the department chair or program director.

Doctor of Philosophy candidates should refer to the Graduate School of Arts & Sciences website for specific information on preparing their dissertation for submission. Other engineering doctoral students should prepare their dissertation according to the Thesis Format Guidelines document found on the Engineering Student Services website. A Word version and a LaTeX version are available for download.

Each candidate for the doctoral degree must electronically submit a final approved .pdf version of his/her dissertation. The link can be found on the School of Engineering website under Information for Graduate Students/Dissertation Submissions. Your dissertation should include an abstract embodying the principal findings of the research and approved by the doctoral committee as ready for publication. Such abstract will be published in Dissertation Abstracts, which announces the availability of the dissertation for distribution. For more information regarding the length of the Abstract, please refer to the Abstract section in the Thesis Format Guidelines document found on the Engineering Student Services website under Information for Graduate Students and Forms.

The University library services will arrange to bind the dissertation. Of the three hardcopies submitted, one courtesy copy will be given to the student; one will be given to the advisor and another to the department.

Transfer Credit

A maximum of 6 units of graduate credit obtained at institutions other than Washington University may be applied toward the Master's degree. Approved transfer credit for undergraduate coursework completed at a different institution cannot be posted until a letter is received from that institution's registrar, which states the graduate level coursework was not used to satisfy undergraduate degree requirements.

A maximum of 24 units of graduate credit earned at institutions other than Washington University may be applied toward the Doctor of Philosophy degree and a maximum of 48 units for the Doctor of Science degree. Transfer credit must be recommended by the advisor, department or program chairman, and be approved by the appropriate registrar. No graduate courses carrying grades lower than "B" can be accepted for transfer toward any graduate degree.

No courses will be accepted toward degree requirements if the course exceeds the 10 year maximum time period unless they have formal approval of the Graduate Board of the School of Engineering.

Financial Aid - Scholarships and Assistantships

Financial aid in the form of scholarships and assistantships is administered by the academic department or program that is the indicated major of the student. Scholarships, wages, and stipends are only available to full-time students who can demonstrate the potential of making significant contributions to the department and its research activities. Continuation of scholarships and assistantships is based on academic performance.

Highly qualified applicants for full-time study will be considered for scholarships and assistantships based upon funds available in each department or program. Scholarships and assistantships are limited to available funds including government and private-sector grants and contracts. Graduate Record Examination (GRE) test scores must be provided by applicants to be considered for scholarships or assistantships. All fall semester doctoral applications will be reviewed for full financial assistantship if they are submitted by the application deadline of January 15th.

Students holding scholarships and assistantships are required to devote full time to their graduate studies. They are not permitted to engage in any other work without

special permission of the School of Engineering. Awards may be made for the academic year (typically nine months) or the full calendar year (twelve months), depending on the student's circumstances and the nature and source of the award.

Financial Aid - Loans

The federal government provides a number of student loan programs with rules and requirements for each program. These are subject to change by the government agency overseeing the program and require that detailed financial information be provided by the student. Information about these loan programs is available in the Engineering Accounting Office in Sever Hall Room 105 (phone 314-935-6183). This office should also be contacted regarding Federal Work Study funds.

Safety and Security

Each year, the University publishes a brochure, *Safety and Security*, which details what to do and who to contact in an emergency and includes the federally required annual security report. For a copy, contact the Washington University Police Department, Campus Box 1038, One Brookings Drive, St. Louis, MO 63130-4899, (314) 935-9011, or visit their web site at police.wustl.edu.