

Doctoral Degrees

Doctor of Philosophy

The Doctor of Philosophy (PhD) degree is not only an exploration of the knowledge in a given discipline but also an original contribution to it. To the extent that doctoral education has been successful, the student's relationship to learning is significantly changed. Having made a discovery, developed an insight, tested a theory or designed an application, the PhD recipient is no longer a student but a colleague of the faculty. It is for this reason that the PhD is the highest degree offered by a university.

The core mission of PhD programs at research universities is to educate the future faculty of other research universities and institutions of higher education. Graduates of Washington University participate in research and teaching; they also make valuable contributions to society by applying the analytical and creative skills required for scholarship to careers in the business, government and nonprofit sectors. The Graduate School therefore works with other university offices to ensure that students have the opportunity to develop these transferable skills.

Among the critical components the university provides for these purposes are a small and select graduate student body, faculty members dedicated to scholarly work, and the physical facilities needed for research. In these regards, Washington University compares favorably to the finest graduate institutions in the world. However, the key ingredients of PhD completion must be provided by the student: a love of learning and a desire to increase the sum of human knowledge. Motivation and perseverance are prerequisites for success in PhD programs.

Doctor of Science

The Doctor of Science (DSc) degree is conferred in recognition of the candidate's abilities and attainments in some field of engineering or applied science. The DSc is a doctorate in science equivalent to a PhD doctoral degree. The departments of Electrical & Systems Engineering and Mechanical Engineering & Materials Science offer both the PhD and DSc doctoral options for graduate students. For information about the differences between the PhD and DSc degrees, please refer to the DSc and PhD Comparison (PDF) (<https://mems.wustl.edu/graduate/programs/Documents/DoctoralComparisonSection.pdf>).

General Requirements

Candidates for doctoral degrees at Washington University must complete all courses required by their department; maintain satisfactory academic progress; pass certain examinations; fulfill residence and teaching requirements (if applicable); write, defend and submit a dissertation; and file an Intent to Graduate form on WebSTAC (<https://acadinfo.wustl.edu>).

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. Course work completed more than seven years prior to the date the degree is awarded generally cannot be accepted as satisfying degree requirements. No courses will be accepted toward degree requirements if the course exceeds the 10-year maximum time period unless they are formally approved by the Engineering Graduate Board. In addition, all milestone requirements for the degree must be completed within seven years from the time the student is admitted to a graduate 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. Candidates for the Doctor of Philosophy degree are required to follow the guidelines of the Graduate School. Please refer to the Graduate School website (<http://graduateschool.wustl.edu/>) for policies and guidelines for the Doctor of Philosophy degree. Candidates for the Doctor of Science degree are required to follow the guidelines of McKelvey School of Engineering. Please refer to the DSc and PhD Comparison (PDF) (<https://mems.wustl.edu/graduate/programs/Documents/DoctoralComparisonSection.pdf>) for more information about the DSc requirements.

Adviser & Doctoral Committee

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

Each department within McKelvey School of Engineering has its own policy related to the selection of a doctoral committee; therefore, students should consult with their faculty adviser regarding the appointment of their doctoral committee.

Doctoral Qualifying Examination

To be admitted to candidacy for a doctoral degree, the student must pass a comprehensive qualifying examination that may consist of both written and oral portions. The examination is administered by the student's department or program, and the student should consult their adviser for information concerning the scope of the examination and the dates on which it is given. The examining panel will consist of faculty members approved by the department chair or the program director.

Doctoral Dissertation

Doctoral candidates must submit a satisfactory dissertation that involves independent creative work in an area of specialization and that demonstrates an ability for critical and constructive thinking. It must constitute a definite contribution to knowledge in some field of engineering or applied science. The research that is the subject of the dissertation must have been performed under the supervision of a member of the faculty of McKelvey School of Engineering. The candidate must defend the dissertation during a final oral examination by an examining committee to be nominated by the adviser and approved by the appropriate dean.

Doctor of Philosophy candidates should refer to the Doctoral Dissertation Guide (http://graduateschool.wustl.edu/sites/graduateschool.wustl.edu/files/Doctoral%20Dissertation%20Guide%202018_Links.pdf) found on the Graduate School website for specific information about preparing their dissertation for submission. Doctor of Science students should prepare their dissertation according to the DSc & Master's Thesis Format Guidelines (<https://engineering.wustl.edu/current-students/student-services/Pages/forms.aspx#thesis-submission>) found on the Engineering website.

Each candidate for the doctoral degree must electronically submit a final approved version of their dissertation. The dissertation should include an abstract that embodies the principal findings of the research and that has been approved by the doctoral committee as ready for publication. Such an abstract will be published in Dissertation Abstracts, which announces the availability of the dissertation for distribution.