

DOCTORAL DEGREE PROGRAMS

Missouri S&T offers the doctor of philosophy degree and the doctor of engineering degree.

The information provided in this section outlines the minimum requirements established by the graduate faculty of Missouri University of Science and Technology. Individual programs may have additional requirements set by the academic department. More information about each specific degree program is available on the departmental websites and in the areas of study sections of this catalog.

A person who has held the rank of assistant professor or higher at Missouri S&T is not eligible to become a candidate for the doctoral degree at this institution.

Time Limit

Once admitted to a doctoral program, a student will be given eight years to complete the program. A student may take a leave of absence, up to one year only, which will not count toward the eight-year time limit.

To apply for a leave of absence the student must consult with their academic advisor to complete the Leave of Absence Request form and submit for approval, first to the department chair and then to the vice provost of graduate education.

Academic Advisor Requirements

All students pursuing a doctoral degree will have an academic advisor (and co-advisor, if applicable) who must be a member of the Missouri S&T graduate faculty. If the academic advisor does not hold an appointment in the student's academic department, a faculty member in that department must be designated as a co-advisor. If a student has co-advisors in different departments, the student's graduate research credit may be shared by all departments involved.

Transferring Credits

Coursework may be transferred from another university as long as these credits have not been used to meet the requirements of another degree and were registered as graduate credit when they were taken. Students that do not hold a master's degree may transfer a maximum of eighteen credit hours and students that hold a master's degree may transfer a maximum of nine credit hours. Students must have earned at least a B grade or equivalent for all courses to be transferred to a Missouri S&T doctoral program, and must be entered as part of the student's plan of study on the Form 5/5-A. The Missouri S&T equivalent must be stated, and a transcript that includes the course(s) to be transferred should accompany the Form 5/5-A. Approval of the Form 5/5-A will allow the transferred course(s) to be entered on the student's Missouri S&T transcript, but only after the registrar's office has received the student's official transcript(s) from their previous school(s).

Qualifying Examination

A qualifying examination will be administered by the student's academic department and the results must be reported on the Form 4 by the department chair to the vice provost of graduate education. The candidate must be enrolled at the time of the examination. If the examination is administered during the intersession, the student must have been enrolled in the immediately preceding semester/session; or, prior to the examination date, they must enroll in one credit hour of Oral Examination, 5040/6040 (charged as an examination only fee). The results of this examination will allow the student's advisory committee

to assess the student's level of preparation for the doctoral degree and will assist the committee in helping to plan the student's plan of study (Form 5). The qualifying examination must be passed no later than the end of the fifth semester of enrollment in a doctoral program. Students who fail to comply with the deadline to submit the Form 4 will have a registration hold placed on their account by the office of graduate education. A student who fails the examination twice will no longer be eligible to receive a doctoral degree from that program. However, the student is eligible to pursue a graduate degree from any other graduate degree program willing to accept them.

Plan of Study

The beginning doctoral student should consult with their academic advisor to determine an appropriate degree plan. After the student has passed the qualifying exam, the student must formally plan the remainder of their graduate program in consultation with their academic advisor and selected committee members and submit a plan of study (Form 5) for approval, first to the department chair and then to the vice provost of graduate education. The Form 5 must be submitted by the end of the semester in which the student passes the qualifying examination. Students who fail to comply with the deadline to submit the Form 5 will have a registration hold placed on their account by the office of graduate education.

A student will be formally accepted as a candidate for a doctoral degree after they pass the qualifying exam and their Form 5 has been approved by the advisory committee, the department chair, and the vice provost of graduate education.

If changes to the approved Form 5 occur at any time, the candidate must submit a Form 5-A to revise their approved plan of study.

- For curriculum changes, the student, academic advisor, and department chair must approve the Form 5-A.
- For committee changes, an academic advisor and/or committee member being removed must acknowledge their removal. The student, academic advisor, current committee members, and department chair must approve the Form 5-A. A contingency procedure that addresses circumstances when a student seeks to change the makeup of their graduate advisory committee, but a member or advisor is either unable or unwilling to provide the required authorization can be found on the Graduate Education webpage.

Residency and Research Requirement

Residency at Missouri S&T is defined as sustained intellectual interactions among the student and the academic community. The candidate for a doctoral degree must complete a minimum of three years of residency, which is equivalent to at least six academic semesters while enrolled as an on-campus student at Missouri S&T. Students holding a master's degree are automatically credited with two semesters of residency. Residency must be documented on the student's plan of study (Form 5/5-A).

Students unable to meet the residency requirement given above, such as distance students, can meet this requirement through an alternative route. In consultation with their academic advisor, the student can utilize other experiences toward meeting the residency requirements. Such experiences include regular contact with the student's academic advisor, committee members, and other graduate students, participation in a

seminar series, etc. Other experiences that would count toward earning residency are listed in a supplemental document available from the office of graduate education. It is the responsibility of the student's academic advisor to document suitable residency experiences. This documentation must be included with the Form 5/5-A.

Research will normally be conducted on the Missouri S&T campus, but in special cases, all or part of the research may be conducted elsewhere. Off-campus research should have the prior written approval of the student's academic advisor, department chair, and the vice provost of graduate education (the application to conduct off-campus research is available on the office of graduate education webpage). Care must be taken to ensure that an off-campus research endeavor will result in educational experiences equivalent or superior to those that a student might expect to have at Missouri S&T.

Comprehensive Examination

After the candidate has completed at least 50% of the coursework required for the doctoral degree, as listed on their approved plan of study (Form 5/5-A), the advisory committee must administer the comprehensive examination.

The candidate must be enrolled at the time of the examination. If the examination is administered during the intersession, the student must have been enrolled in the immediately preceding semester/session; or, prior to the examination date, they must enroll in one credit hour of Oral Examination, 5040/6040 (charged as an examination only fee). The results of the comprehensive examination will be reported by submitting the Form 6, first to the department chair and then to the vice provost of graduate education. A candidate will be considered to have passed the examination if all, or all but one, of the advisory committee members vote that the candidate pass. If the candidate fails the comprehensive examination, the advisory committee will recommend additional work or other remedial measures to the candidate. A second comprehensive examination may be scheduled no sooner than twelve weeks after the candidate's first attempt. A student who fails the examination a second time will no longer be eligible to receive a doctoral degree from that program. However, the student is still eligible to pursue a graduate degree from any other graduate degree program willing to accept them.

Dissertation

The findings and results of research undertaken by the candidate must be presented in a written dissertation. The dissertation should embody the results of an original investigation and must represent significant, creative, and independent work. A manual entitled "Thesis & Dissertation Specifications" is available on the office of graduate education webpage. This manual outlines the specific requirements for the dissertation.

Final Examination (Defense)

When the dissertation is completed, the candidate arranges a date, time and location for the final examination (defense) of the dissertation and distributes a copy to each member of their advisory committee at least seven days prior. The defense should be scheduled only during days the university is conducting normal business operations, and the candidate must be enrolled at the time of the defense. If the examination is administered during the intersession, the student must have been enrolled in the immediately preceding semester/session; or, prior to the examination date, they must enroll in one credit hour of Oral Examination, 5040/6040 (charged as an examination only fee). Additionally, there must be at least twelve weeks between passing the comprehensive examination and holding the defense. Details of the defense, along with

the dissertation title and abstract, must be publicized by the office of graduate education at least one week prior to the defense.

The defense may be comprehensive in character and the candidate should be able to demonstrate an acceptable level of knowledge of a professional area, as defined by their degree program. The defense must be presented as an oral examination and attendees may question the candidate with the permission of the chair of the advisory committee.

Approval of Defense and Dissertation

A candidate will be considered to have passed the defense if all, or all but one, of the advisory committee members vote that the candidate pass. If the candidate fails the defense, the committee will recommend additional work or other remedial measures to be taken before another defense is scheduled. A student who fails a second time will no longer be eligible to receive a doctoral degree from that program. However, the student is still eligible to pursue a graduate degree from any other graduate degree program willing to accept them.

At the close of a successful defense, the members of the advisory committee will sign the Form 7 to signify that they have examined the dissertation closely for both scientific content and format, and determined that it meets the requirements for a doctoral degree and is worthy of acceptance by the graduate faculty of Missouri S&T. If the committee indicates that corrections must be made to the dissertation, the candidate must make such corrections and then seek approval of the revised dissertation from the committee members and obtain the necessary signatures. The chair of the advisory committee will report the results by submitting the Form 7, first to the department chair and then to the vice provost of graduate education. After the Form 7 has been submitted and the office of graduate education approves the format of the document, the candidate will be given instructions for final submission based on the release information provided on the Form 7.

Final Dissertation Release Information

The academic advisor will indicate how the final dissertation will be released on the Form 7. There are three options available; immediate release, one-year hold, or indefinite hold. If immediate release or one-year hold is selected, the final dissertation must be submitted electronically to the electronic thesis/dissertation (ETD) website. If indefinite hold is selected the final dissertation must be printed and submitted to the office of graduate education. The final dissertation must not be submitted until instructions are provided from the office of graduate education.

Doctor of Philosophy Degree (Ph.D.)

The doctor of philosophy degree is the highest level of academic achievement awarded and is designed for students to produce original research and make significant, independent contributions to their chosen field of study that expands the boundaries of knowledge. The research during this program will culminate into a dissertation that is likely to be published, and students will be required to present their dissertation in an oral defense.

General Requirements for the Doctor of Philosophy Degree (Ph.D.)

Students who hold a master's degree will be required to complete a minimum of forty-two hours of graduate credit. The plan of study (Form 5/5-A) must include a minimum of twelve credit hours of 4000-, 5000-, and 6000-level lecture courses (1000/2000-level courses cannot be included). It is recommended that nine credit hours of the required

coursework come from the group of 6000-level lecture courses. Additionally, a minimum of twenty-four credit hours of graduate research is required. A Ph.D. student who holds a master's degree will receive a block of thirty credit hours that can be included on the Form 5/5-A, which will count toward the total seventy-two-hour program requirement.

Students who do not hold a master's degree will be required to complete a minimum of seventy-two hours of graduate credit. The plan of study (Form 5/5-A) must include a minimum of thirty credit hours of 4000-, 5000-, and 6000-level lecture courses (1000/2000-level courses cannot be included). It is recommended that fifteen credit hours of the required coursework come from the group of 6000-level lecture courses. Additionally, a minimum of thirty credit hours of graduate research is required.

Credit from only one master's degree may be included on the doctoral plan of study (Form 5/5-A).

Committee Requirements for the Doctor of Philosophy Degree (Ph.D.)

For students pursuing the doctor of philosophy degree, the committee will be designated on the plan of study (Form 5/5-A). The academic advisor will also serve as the chairperson of the dissertation advisory committee. The committee must consist of a minimum of five members and the academic advisor and at least three others must be members of the Missouri S&T graduate faculty. The advisory committee must include at least one member from outside the student's major department. If a committee member is not a member of the Missouri S&T graduate faculty, a vita verifying equivalent level of education must be provided with the Form 5/5-A.

Students are encouraged to make effective use of their advisory committee members by:

- Submitting a written description of the proposed research to the members of the committee as soon as the topic is decided.
- Obtaining written approval of the committee indicating that the proposed research is of the appropriate level of caliber.
- Submitting periodic progress reports to the committee and discussing these reports with individual committee members or with the committee as a group. The frequency of reports and the method of discussion should be determined by the committee.

Procedures for Earning the Doctor of Philosophy Degree (Ph.D.)

All doctoral students must have fulfilled all admissions requirements, including English proficiency test scores, if necessary. Students admitted to a Ph.D. program must adhere to the following procedures.

1. The student will consult with their academic advisor about course scheduling and registering for classes.
2. The student passes a qualifying examination administered by the department in which the student intends to become a doctoral degree candidate.
3. After the student has passed the qualifying examination, the student must formally plan the remainder of their graduate program in consultation with their academic advisor and selected committee members, and submit the Form 5 for approval, first to the department chair and then to the vice provost of graduate education. Students who fail to comply with the deadlines to submit the Form 4 and Form

5 will have a registration hold placed on their account by the office of graduate education.

4. The student will be formally accepted as a candidate for the Ph.D. degree after they pass the qualifying examination and their Form 5 has been approved by the advisory committee, the department chair, and the vice provost of graduate education.
5. After the candidate has completed at least 50% of the coursework required for the Ph.D. degree, as listed on their approved plan of study (Form 5/5-A), the advisory committee must administer the comprehensive examination.
6. The results of the comprehensive examination will be reported by submitting the Form 6, first to the department chair and then to the vice provost of graduate education.
7. The candidate will complete the academic requirements included on their plan of study.
8. The candidate will apply for graduation through their Joe'SS account by the deadline posted by the registrar's office.
9. The candidate will arrange a date, time, and location for the defense and must inform the office of graduate education electronically, as the defense must be publicized at least one week in advance. The defense must not be scheduled earlier than twelve weeks after passing the comprehensive examination and the candidate must be enrolled at the time of defense.
10. The candidate will distribute copies of the dissertation to all members of the advisory committee at least seven working days before the defense.
11. The candidate must submit a complete copy of the dissertation to the office of graduate education to begin the format checking process.
12. The candidate holds the defense.
13. The chair of the advisory committee will report the results by submitting the Form 7, first to the department chair and then to the vice provost of graduate education.
14. Once the format check is complete and the Form 7 has been received, the office of graduate education will direct the candidate to submit the final copy of the dissertation.
15. Upon departmental request, the candidate may present one or more copies of the final dissertation to the department.
16. The Board of Curators will, upon the recommendation of the graduate faculty, grant the candidate the Ph.D. degree when all degree requirements are met and all enrollment or examination fees have been paid.

Doctor of Engineering Degree (D.E.)

The doctor of engineering degree is the highest level of academic achievement awarded and is designed for students to develop the problem-solving and research skills to practice engineering in their field of study. The research and internship experience during this program prepares individuals for professional careers in business, industry and the public sector. This program will culminate into a dissertation that is likely to be published, and students will be required to present their dissertation in an oral defense.

General Requirements for the Doctor of Engineering Degree (D.E.)

Students who hold a master's degree will be required to complete a minimum of sixty hours of graduate credit. The plan of study (Form 5/5-A) must include a minimum of twelve credit hours of 4000-, 5000-, and 6000-level lecture courses (1000/2000-level courses cannot be included).

It is recommended that nine credit hours of the required coursework come from the group of 6000-level lecture courses. Additionally, a minimum of twenty-four credit hours of graduate research and twenty-four credit hours of graduate internship is required. A D.E. student who holds a master's degree will receive a block of thirty credit hours that can be included on the Form 5/5-A, which will count toward the total ninety-hour program requirement.

Students who do not hold a master's degree will be required to complete a minimum of ninety hours of graduate credit. The plan of study (Form 5/5-A) must include a minimum of thirty credit hours of 4000-, 5000-, and 6000-level lecture courses (1000/2000-level courses cannot be included).

It is recommended that fifteen credit hours of the required coursework come from the group of 6000-level lecture courses. Additionally, a minimum of thirty credit hours of graduate research and twenty-four credit hours of graduate internship is required.

Credit from only one master's degree may be included on the doctoral plan of study (Form 5/5-A).

Internship for the Doctor of Engineering Degree (D.E.)

The internship for the doctor of engineering degree involves a minimum of one year of planned and approved high-level engineering experience. The candidate and the academic advisor will plan the internship in cooperation with the interning organization. The candidate then prepares a detailed proposal that describes the goals of the internship, the tasks to be accomplished, and the facilities at the intended site. This proposal must be approved by the candidate's advisory committee and the department chair prior to the start of the internship. At the time of approval, and prior to enrolling in graduate internship, the candidate's internship supervisor from the interning organization must be added to the advisory committee by submitting the Form 5-A, first to the department chair and then to the vice provost of graduate education. The internship supervisor is to be selected on the basis of their qualifications of education and experience that suggest doctoral equivalency credentials. The interning organization must allow visits to the internship site by the candidate's academic advisor and/or advisory committee members. The interning organization must also agree that any results of the internship may be published by the candidate, although reasonable proprietary rights of the interning organization will be protected. Responsibility for arranging the internship, including site selection and financial compensation during the period of the internship, lies with the candidate.

Committee Requirements for the Doctor of Engineering Degree (D.E.)

For students pursuing the D.E. degree, the committee will be designated on the plan of study (Form 5/5-A). The academic advisor will also serve as the chairperson of the dissertation advisory committee. The committee must consist of a minimum of five members and the academic advisor and at least three others must be members of the Missouri S&T graduate faculty. The advisory committee must include at least one member from outside the candidate's major department. If a committee member is not a member of the Missouri S&T graduate faculty, a vita verifying equivalent level of education must be provided with the Form 5/5-A.

Students are encouraged to make effective use of their advisory committee members by:

- Submitting a written description of the proposed research to the members of the committee as soon as the topic is decided.
- Obtaining written approval of the committee indicating that the proposed research is of the appropriate level of caliber.
- Submitting periodic progress reports to the committee and discussing these reports with individual committee members or with the committee as a group. The frequency of reports and the method of discussion should be determined by the committee.

Procedures for Earning the Doctor of Engineering Degree (D.E.)

All doctoral students must have fulfilled all admissions requirements, including English proficiency test scores, if necessary. Students admitted to a D.E. program must adhere to the following procedures.

1. The student will consult with their academic advisor about course scheduling and registering for classes.
2. The student passes a qualifying examination administered by the department in which the student intends to become a doctoral degree candidate.
3. After the student has passed the qualifying examination, the student must formally plan the remainder of their graduate program in consultation with their academic advisor and selected committee members, and submit the Form 5 for approval, first to the department chair and then to the vice provost of graduate education. Students who fail to comply with the deadlines to submit the Form 4 and Form 5 will have a registration hold placed on their account by the office of graduate education.
4. The student will be formally accepted as a candidate for the D.E. degree after they pass the qualifying examination and their Form 5 has been approved by the advisory committee, the department chair, and the vice provost of graduate education.
5. After the candidate has completed at least 50% of the coursework required for the D.E. degree, as listed on their approved plan of study (Form 5/5-A), the advisory committee must administer the comprehensive examination.
6. The results of the comprehensive examination will be reported by submitting the Form 6, first to the department chair and then to the vice provost of graduate education.
7. Prior to enrolling in graduate internship, the candidate's internship supervisor must be added to the advisory committee by submitting the Form 5-A, first to the department chair and then to the vice provost of graduate education.
8. The candidate will complete the academic requirements included on their plan of study.
9. The candidate will apply for graduation through their Joe'SS account by the deadline posted by the registrar's office.
10. The candidate will arrange a date, time, and location for the defense and must inform the office of graduate education electronically, as the defense must be publicized at least one week in advance. The defense must not be scheduled earlier than twelve weeks after passing the comprehensive examination and the candidate must be enrolled at the time of defense.
11. The candidate will distribute copies of the dissertation to all members of the advisory committee at least seven working days before the defense.
12. The candidate must submit a complete copy of the dissertation to the office of graduate education to begin the format checking process.

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15. Once the format check is complete and the Form 7 has been received, the office of graduate education will direct the candidate to submit the final copy of the dissertation.
16. Upon departmental request, the candidate may present one or more copies of the final dissertation to the department.
17. The Board of Curators will, upon the recommendation of the graduate faculty, grant the candidate the D.E. degree when all degree requirements are met and all enrollment or examination fees have been paid.