

# ENGINEERING, PH.D.

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Driven by cutting-edge research, the Ph.D. in Engineering program at Marshall University provides students with advanced knowledge and expertise in specialized engineering fields. The program provides maximum flexibility for students and faculty to address 21st century engineering problems with the advancement of their field and for success in a range of careers in academia, research, government, industry leadership, or innovation.

## Admission Requirements

The doctoral degree is a research degree granted on the basis of broad knowledge of engineering and in-depth study in a specific area leading to a dissertation reflecting original work by the doctoral candidate. When applying for admission, a student must meet the following minimum requirement for admission to the program in addition to the general requirements of Graduate Studies at the University:

- Earned Master's degree in a relevant discipline with a minimum GPA of 3.0 on a 4.0 scale; Or

Bachelor's degree in a relevant engineering or computing discipline with a minimum GPA of 3.5 on a 4.0 scale;

- Three (3) letters of recommendation that demonstrate strong evidence for a high potential for success in doctoral studies and research;
- A résumé/C.V.
- A statement of purpose (up to 2 pages long), including an applicant's personal motivation, desired field of study, research area, and career goals.
- All applicants, regardless of citizenship, must provide proof of English proficiency to be considered for admission to Marshall University. Graduate English proficiency requirements are available here: <https://www.marshall.edu/admissions/graduate-proof-of-english-proficiency/>;
- No Graduate Record Exam (GRE) score is required, but one may be submitted to strengthen an application.

Fulfilling the minimum requirements does not guarantee admission and factors such as appropriateness of the applicant's research objectives to the research interests of the program faculty, availability of faculty to supervise the applicant's research, availability of research funds to support the research, and prior research accomplishments of the applicant will also influence the admission decision. The criteria described below are used to evaluate admission to the program:

- Prior experience in undergraduate or graduate research.
- Post-BS degree and/or professional experience relevant to the planned degree of study.
- Peer-reviewed publications and/or award-winning presentations in technical conferences.
- Availability of appropriate faculty to serve as research advisor(s) and availability of research funds to support the student's desired program of study.

- The applicant's test scores, recommendations, and relevant work experience must indicate a high potential for success in doctoral studies and research.

In addition, an applicant who does not meet the minimum requirements may still be admitted with provisional standing if they have potential for success as a doctoral student. His/her status may be changed to full standing after satisfying requirements specified by the director of the program, in consultation with the appropriate department chairperson, at the time of admission. If admitted in provisional standing, the student must remove all deficiencies and apply for reclassification to full standing prior to the completion of fifteen (15) graduate credit hours.

Although the general requirements for the doctoral program are the same for all departments in the College of Engineering and Computer Sciences (CECS), each department may include additional degree requirements for students pursuing specialization in that department to support specialized research.

## Graduation Requirements

The Ph.D. in Engineering requires academic work, consisting of course work and dissertation work in a specialized area, beyond baccalaureate work. Qualifying and comprehensive examinations and dissertation are also required. All requirements, including the dissertation, must be completed within a period of eight consecutive years. Maintenance of a minimum quality point average of 3.0 and adherence to the general regulations of Graduate Studies is expected.

### Qualifying Exam

All students must complete a qualifying examination based mostly on undergraduate materials in their chosen discipline through a formal process established by the department prior to the end of the first year of doctoral study. Students admitted with a bachelor's degree on an exceptional basis must successfully complete the qualifying examination before the end of the regular semester of enrollment in which the student is completing 24 hours or more of graduate coursework. The process should include, at a minimum, an examination of the student's fundamental knowledge managed by the Graduate Committee of the department. Based on the student's performance on the qualifying examination, the student may be:

1. Permitted to continue in the doctoral program; Or
2. Advised to transfer to a M.S. degree program in an appropriate discipline in the College (for students admitted without an M.S. in their chosen discipline); Or
3. Recommended for termination from the graduate program of the College.

### Dissertation Work Requirements

A minimum of twenty (20) credit hours of doctoral research and dissertation (ENGR 702 Dissertation Research) built upon the student's course of study and making a significant contribution to the state of knowledge or to the art of the engineering profession is required; not more than 12 credit hours may be earned in a particular semester:

ENGR 702 Dissertation Research can be taken as 1-12 credit hours at a time.

## Dissertation Committee

Each doctoral student's dissertation committee must be formed after the successful completion of the student's qualifying examination or the second semester in the program. The committee *consists* of a minimum of four (4) voting members from two or more disciplines in the academic unit at Marshall University or another accredited university. Additionally, should none of the four committee members chosen have experience with serving on a doctoral committee, a fifth member with experience may be appointed by the Dean in consultation with the Program Director from outside the department, college, or university. The student is responsible for identifying, in consultation with the department chairperson or program director, a faculty member who is willing to chair his/her advisory committee. The chairperson of the committee and the student are responsible for identifying the other faculty members required/desired and determining if they are willing to serve.

The Plan of Study must be completed before the end of the second semester of enrollment for the degree or completion of 12 credit hours of graduate courses, whichever comes first. Each proposed Plan of Study must be approved by the student's dissertation committee, the department chairperson, the program Director, and the Dean.

## Comprehensive Examination and Admission to Candidacy

The comprehensive examination will consist of a written portion and an oral defense of the written research proposal. The written portion will consist of several parts as appropriate to the major discipline and the research area. This examination will test the student's breadth of knowledge in the discipline, depth of knowledge in selected areas, and the ability to integrate the knowledge acquired from several courses. This examination must be given after the student has completed at least eighty (80) percent of the coursework beyond the master's degree with a point average of 3.0 or above, as prescribed in the program of study. However, the written comprehensive examination should be completed before the end of the semester following completion of the coursework prescribed in the Plan of Study. All parts of the written examination should be completed within a period of two (2) weeks.

The written research proposal should, as a minimum, consist of the development of the research problem from the extant knowledge in the area, the approach and methodology to be followed, the expected original contribution to the extant knowledge, and the expected timeline for the completion of the research. The student should submit copies of the written proposal to the committee within thirty (30) days from the date of taking the final part of the written examination, and the proposal defense will be scheduled shortly thereafter. The student will be informed of the results of the entire comprehensive examination (written part and proposal presentation) at the end of the defense of the research proposal.

On passing the entire comprehensive examination, the student will be admitted to candidacy for the doctoral degree. Normally, a student not passing any part of the comprehensive examination will not be permitted to continue in the doctoral program. However, at the request of the student and the agreement of the committee, a second chance may be given to the student to pass that part of the examination that he/she did not pass within a year. The committee may prescribe additional academic work to be undertaken by the student prior to making the second attempt. No student will be permitted to continue in the program if he/she does not successfully

complete all parts of the comprehensive examination after the second attempt.

## Residency Requirement (4 semesters)

A residence of four (4) regular semesters, with at least two (2) semesters in continuous residence, is required. For students who wish to complete the doctoral program in a part-time capacity due to employment in a local industry, accommodation on residency will be negotiated between the student and his/her dissertation committee.

## Course Requirements

The Ph.D. in Engineering requires academic work, consisting of course work and dissertation work in a specialized area, beyond baccalaureate work. Qualifying and comprehensive examinations and dissertation are also required. All requirements, including the dissertation, must be completed within a period of eight consecutive years. Maintenance of a minimum quality point average of 3.0 and adherence to the general regulations of Graduate Studies is expected.

- Required Coursework (18 or 48 credit hours)

The required courses for all disciplines include:

Code	Title	Credit Hours
ENGR 701	Research Methods for Doc	3
EM 660	Project Management	3
EM 675	Engineering Economics	3
Additional hours of graduate coursework in the chosen discipline. This coursework is to be negotiated with the student's dissertation committee and taken at the full graduate level (600 or above) level.		9
<b>Total Credit Hours</b>		<b>18</b>

1. For Students Admitted with a master's degree (18 credit hours)

A minimum of eighteen (18) credit hours of coursework beyond the master's degree including six (6) credit hours of full graduate courses acceptable to the student's advisory committee. If a student completed a thesis at the master's level, then six (6) credit hours of thesis research can be substituted for graduate coursework.

2. For students Admitted with a bachelor's degree (48 credit hours)

Code	Title	Credit Hours
ENGR 701	Research Methods for Doc	3
EM 660	Project Management	3
EM 675	Engineering Economics	3
Additional hours of graduate coursework in the chosen discipline. This coursework is to be negotiated with the student's dissertation committee and taken at the full graduate level (600 or above) level.		9
A minimum of fifteen (15) credit hours at the full graduate level (600 or above), including the courses listed above		15
A minimum of fifteen(15) credit hours at the 500 or 600 level, acceptable to the student's advisory committee.		15
<b>Total Credit Hours</b>		<b>48</b>