

## Mechanical Engineering Requirements for direct B.S. to Ph.D. admission

### Admission Requirements

All applicants for the direct B.S. to Ph.D. program in Mechanical Engineering must have a Bachelor of Science degree in engineering, physical sciences, mathematics or a closely related field, and must meet all Idaho State University Graduate School admission requirements. In addition, official Graduate Record Examinations (GRE) score reports are required for all applicants, with a score equal or above the upper 55th percentile on the Quantitative Reasoning for admission. The GRE score may be waived only for ISU students based on previous academic performance. All ISU students please check with the program director to see if you qualify before applying.

### General Requirements

With the assistance of the Mechanical Engineering faculty, the student shall select an initial advisor during the first semester of residence to help in planning a program of study and research. The student must also complete a Plan of Study and form a complete advisory committee by the time six credits of course work have been completed.

30 credit hours (24 credits of coursework + 6 credits Thesis/Special Project) are required to complete an equivalent to the traditional M.S. degree at ISU (at least 50% of the credits should be at the 6600 level). Approximately half of the credits are engineering and technical electives, subject to the approval of the student's advisory committee. See table below for coursework requirements.

### Required Courses (30 credits)

<b>Select at least 3 credits (1 course) of advanced mathematics from the following list:</b>		<b>3</b>
MATH 5560	Advanced Linear Algebra	
MATH 5521	Advanced Engineering Mathematics I, or ME Dept. approved equivalent.	
MATH 5522	Advanced Engineering Mathematics II	
MATH 5542	Introduction to Numerical Analysis II	
MATH 5565	Partial Differential Equations	
<b>Select at least 9 credits (3 courses) from the following list:</b>		<b>9</b>
ME 6607	Advanced Thermodynamics	
ME 6635	Transport Phenomena	
ME 6676	Conduction Heat Transfer	
ME 6640	Advanced Vibrations	
MCE 6642	Advanced Control Systems	
MCE 6643	Advanced Measurement Methods	
ME 6644	Advanced Kinematic Design	
ME 6648	Robotic Grasping/Manipulation	
ME/CE 6665	Finite Element Methods	
<b>Additional coursework, up to 12 credits (4 courses) of approved electives <sup>1</sup></b>		<b>12</b>
<b>Thesis</b>		<b>6</b>

ME 6650	Thesis (6 credits) (for M.S. degree)	
OR		
One additional elective course (3 credits)		
AND		
ME 6650	Special Project <sup>2</sup> (3 credits)	
<b>Total Credits</b>		<b>30</b>
<b>For B.S. to Ph.D.</b>		
Substitute 6 Thesis credits by additional coursework of approved electives <sup>1</sup>		
Ph.D. coursework, up to 6 courses (18 credits) of approved electives <sup>1</sup>		<b>18</b>
Seminar <sup>3</sup> (1 credit)		<b>1</b>
Dissertation (35 credits)		<b>35</b>
<b>Total minimum credits required for graduation</b>		<b>84</b>
<b>Dissemination:</b> In addition to the listed requirements a Ph.D. student must have least 1 article in an international, peer-reviewed journal accepted for publication, or 3 contributions to international, peer-reviewed conferences accepted for presentation at the time of graduation.		

<sup>1</sup> Approved by Major Advisor.

<sup>2</sup> Students desiring to do the non-thesis option must have a minimum of two years of industry experience, or a previous graduate degree (MS or PhD) in an engineering discipline that included the completion of a thesis or dissertation. In place of the 6-credit thesis, the non-thesis option consists of a 3-credit Special Project in addition to a 3-credit course. At the completion of the Special Project, the student will be required to do an oral presentation/defense of the Project.

<sup>3</sup> For each semester the student takes graduate seminar, the student must:

- a) attend the presentations given by other graduate students, or attend other professional talks, seminars, etc.,
- b) make a brief report of half a page on each of the seminar presentations, and
- c) give at least 1 seminar presentation.

NOTE: On completing 24 credit hours in the program, a student may elect to choose defending a Thesis (additional 6 credits) or Special Project (1 additional 3 credit course and 3 credit special project) to obtain the traditional M.S. degree. This option may be exercised only if approved by the student's major advisor.