DOCTOR OF PHILOSOPHY IN MECHANICAL ENGINEERING
STUDY PROCESS AND DEGREE REQUIREMENTS

This document outlines the sequence and details of the study process, and the requirements for the degree of Ph.D. in Mechanical Engineering. These guidelines complement the general university requirements as specified in the Graduate Catalog.

1. Coursework

At least thirty credit hours of coursework *beyond the Masters level* must be taken by a Ph.D. student. In addition, fifteen credit hours of dissertation research credits must be taken (ME 7300). The thirty credit hours of courses must include 6000 and 7000 level graduate courses with the following restrictions and exceptions:

- Ph.D. credit will be given for MAE department 5000 level courses only in the special circumstance that the specific course is a pre-requisite for 6000 or 7000 level courses subsequently taken by the student, or is required by the doctoral dissertation committee.
- Twelve of the thirty hours of coursework included for Ph.D. credit must be MAE department courses
- Ph.D. credit will be given for ME 6950, only when it is specifically offered as a new course in preparation while the university-wide curriculum approval process is being completed
- ME 6970 is not approved for Ph.D. credit
- Up to six hours of ME 7100 (independent research) will be allowed as part of the thirty credits.
- Up to nine hours of ME 7350 (graduate research) will be allowed as part of the thirty credits.

For those students starting their doctoral studies after the completion of their Bachelor’s degree, at least fifty-four credit hours of coursework *beyond the Bachelor’s level* must be taken. In addition, fifteen credit hours of dissertation research credits must be taken (ME 7300). Students who choose to discontinue their doctoral studies after completing thirty graduate credits, may be awarded a Master’s degree. The fifty-four credit hours of courses must be at the 5000, 6000 and 7000 level graduate courses with the following restrictions and exceptions:

- Students may take no more than fifteen credits of 5000 level courses unless specifically directed by their committee.
- At least thirty of the fifty-four hours of coursework included for Ph.D. credit must be MAE department courses
- Ph.D. credit will be given for ME 6950, only when it is specifically offered as a new course in preparation while the university-wide curriculum approval process is being completed
- ME 6970 is not approved for Ph.D. credit
- Up to six hours of ME 7100 (independent research) will be allowed as part of the thirty credits.
- Up to nine hours of ME 7350 (graduate research) will be allowed as part of the thirty credits.

2. Research Proposal and Comprehensive Exam

Within the first year of graduate level study at WMU, the student should choose a Doctoral Dissertation Committee consisting of four members of the Graduate Faculty, including the doctoral advisor and at least one member from outside the MAE department. The student is required to submit a detailed research proposal for evaluation by this committee. The research proposal must include the background, literature review, objectives, and proposed research methodology for the dissertation research. Adequacy of the dissertation proposal will be determined on the basis of preparation, originality, scope and depth of the proposed work, proposed research methodology, anticipated difficulties in execution, and resources available to conduct the proposed work.
For students starting with a Master’s degree, the research proposal should be prepared before completion of fifteen credit hours of coursework. For students starting with a Bachelor’s degree, the research proposal should be prepared before completion of thirty-nine credit hours of coursework.

A comprehensive exam must then be taken for the evaluation of the depth acquired by the student in his/her area of interest, and to determine the adequacy of preparation toward dissertation research. Within one month of submission of the proposal, the committee will collectively determine the adequacy of the proposal. If this proposal is considered substantially adequate for discussion with the student, an exam (written, oral, or both) in the specialty areas that are directly related to the proposed research will be administered by the committee. The committee will review and evaluate the student exam results and proceed with one of the following courses of action:

a) If the committee deems both the student’s proposed solutions to the specific problems and the dissertation proposal to be substantially satisfactory, an oral presentation of the dissertation proposal will be held. This presentation will be open to all interested faculty. At the conclusion of the presentation, a closed session will be held between the student and the committee, in which the student’s answers to the specific questions are discussed, and the committee may make minor suggestions regarding the proposed dissertation research. No re-submission will be required. The student will then be considered to have passed the comprehensive exam, and will officially become a Ph.D. candidate in the department. A letter to this effect will be forwarded to the student, the MAE department Chair, and the Graduate College.

b) An oral presentation of the dissertation proposal will also be held if the committee identifies some deficiencies in the response to the specific exam questions, and/or the dissertation proposal, but considers the combined submissions to be adequate for further discussion. This presentation will be open to all interested faculty. At the conclusion of the presentation, a closed session will be held between the student and the committee, in which the student’s answers to the specific questions are discussed, and the committee may recommend a submission of modified answers. In addition, modifications to the proposed dissertation research will be recommended, based on the above-mentioned criteria. The student will submit the revised response within two weeks of the oral presentation for a re-evaluation by the committee. If the re-submission is deemed acceptable by the committee, the student will be considered to have passed the comprehensive exam, and will officially become a Ph.D. candidate in the department. A letter to this effect will be forwarded to the student, the MAE department Chair, and the Graduate College.

c) If the response to the specific exam questions, and/or the dissertation proposal is deemed inadequate, a re-examination will be required at least one semester after the date of the first exam. This will be considered a failed attempt at the comprehensive exam. Additional preparation, which might be comprised of coursework, independent research, and other appropriate measures, will also be recommended by the committee in writing. This preparation must be accomplished before the exam is offered again. The re-examination will require a re-submission of the proposal. A student may retake this exam only once and will be dismissed from the MAE doctoral program if the exam is not passed the second time.

3. Final Oral Exam (Dissertation Defense)

At the conclusion of the research and at least 6 months after the approval of the research proposal and achievement of candidacy status, the dissertation may be submitted to the dissertation committee. The first portion of the defense will be open to the public, and the second portion held in a closed session with the dissertation committee. The dissertation defense must be held within five years after the student has passed the comprehensive exam. If the defense is not held within this time, the student will be required to re-take the comprehensive exam. Based on the presentation of dissertation work, the committee may recommend required modifications to the dissertation that might include further research, revisions to the dissertation, and other measures, as appropriate (such as a second oral exam); or approval of the Ph.D. dissertation and award of the degree.

Koorosh Naghshineh

Approved by MAE faculty on 9/25/2012