Graduate Student Handbook

DOCTOR OF PHILOSOPHY
IN
MECHANICAL ENGINEERING

Erik Jonsson School of Engineering and Computer Science
The University of Texas at Dallas

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Doctor of Philosophy in Mechanical Engineering
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Key: Old Content     New Content
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Introduction

The faculty, staff and students in the Mechanical Engineering program would like to welcome you to the doctoral program in Mechanical Engineering. This handbook is designed to provide information on policies and procedures in the PhD program. This handbook, the Graduate Catalog and the Mechanical Engineering department website will serve as sources of information for you as you progress through our program. This is not an official document or supplement to the university catalog or other official publications. For official university policy regarding graduate studies, please see the UTD Graduate Catalog: http://catalog.utdallas.edu/

This handbook is subject to change in accordance with university and program amendments. Students are responsible for remaining updated and in compliance with policies throughout their attendance in the program and prior to graduation applications being processed. The policies set forth in this handbook default to new university policies that may be amended without notice. When changes occur, we will do our best to notify you in a timely manner. Check your UTD e-mail regularly. If there are questions not answered in this handbook or if you are unsure about policies and procedures, please contact the Mechanical Engineering Graduate Program Administrator.

Graduate Program Objectives

The objective of the PhD program is to prepare talented doctoral students for careers in which they will create new technologies and processes for the design, manufacturing, control, and operation of components and systems in energy, health care, security and defense, and transportation. Given the key enabling role of mechanical engineering in all areas of technology, the graduates of this program will have the preparation to become technical leaders in emerging and existing scientific and industrial fields in Texas and the nation.
Program Administration
The administration of the graduate program is divided among committees and individuals each having specific responsibilities. Their roles and responsibilities are described below. Two of the most important individuals with whom you will interact are your research advisor and the graduate program administrator. Their roles are described in the Advising section.

Area Faculty:
The faculty who participate in teaching and research supervision within a particular degree program constitute that program’s Area Faculty. The Area Faculty are responsible for the program’s curriculum and requirements, advising and mentoring, and evaluation of student performance and progress. Most faculty participate in more than one degree program.

Graduate Studies Committee:
The role of the Graduate Studies Committee is to serve the needs of the graduate students and faculty in the department. It plays a role in developing, implementing, and monitoring policies and procedures including admissions, course scheduling, and the evaluation on qualifying papers and projects. Committee membership changes periodically.

Associate Department Head for Graduate Studies:
The Associate Department Head for Graduate Studies (Dr. Hongbing Lu) chairs the Graduate Studies Committee and oversees the graduate program.

Advising:
Research Advisor: The research advisor provides mentoring in research, guidance in course selections, assists in the preparation of the degree plan and Milestones Agreement Form, and career guidance. The research advisor supervises and must sign off on the student’s completion of the qualifying exam and other documents, such as proposals and papers leading up to degree completion. In general, new PhD students have selected or have been selected by a research advisor upon admission to the program. Under circumstances where a student is admitted to the PhD program without a research advisor, the student will be given until their second semester in the program to locate a research advisor. Part-time PhD students will be given four semesters (or completion of twelve credit hours at UTD) to select a research advisor. In the event that a student must change research advisors, the student will be given no more than one semester to locate a new research advisor before being dismissed from the program.

Graduate Program Administrator: The mechanical engineering graduate program administrator may be consulted on any matter pertaining to doctoral study. Issues related to degree requirements, program procedures, credit transfers, and other student academic issues should be addressed to the graduate program administrator. Currently, the mechanical engineering graduate program administrator is Ashley Bradberry.
Getting Started in the Program

Orientation for International Students
All F-1 and J-1 visa holders must attend an International Student Orientation session. There will be multiple sessions offered leading up to the start of each semester. Students should register for their orientation session as early as possible. This orientation is required before they can be advised and register for classes.

Department Orientation & Meeting Graduate Program Advisors
All new students are required to attend the Mechanical Engineering New Graduate Student Orientation prior to registering in courses. Official announcements and invitations to this orientation will be sent by email from the Mechanical Engineering Department. Prior to attending this orientation session, students should review this handbook, the semester ME course offerings, the ME section of the Graduate Catalog, and the ME department website, and have a plan for which courses they wish to take. At this orientation, students will meet with a faculty advisor, and have their first semester courses approved for registration.

Registration and Obtaining UTD Identification (ID) Card
Once the required orientation session(s) have been completed, students may register for courses with the ME Graduate Program Administrator. After completing registration, students will be required to obtain a Comet Card, the official identification card for all UTD students, faculty and staff. This card allows the use of campus facilities and services.

Comet Cards are issued at the Comet Center, located on the second floor of the Student Union (north entrance).

Graduate Teaching and Research Assistants
Newly appointed TA’s and RA’s will be required to attend additional orientation sessions given separately by the Office of Graduate Studies, the ME department, and the Office of Human Resources.

The Office of Graduate Studies orientation is a one day program. RA’s and TA’s must attend the whole day.

The Office of Human Resources conducts an Employment Express event for all new employees. All new TA’s and RA’s must attend one of the scheduled Employment Express events to complete required forms which verify employment eligibility and set up payroll information.
Program Facilities

The Engineering and Computer Science Building and the Natural Science and Engineering Research Laboratory provide extensive facilities for teaching and research. These include wind tunnels, materials test systems with temperature chambers, nanoindenter, high impact facilities, ultra-high speed camera, 3D printers, computer clusters, 3D vibration measurement apparatus for microsystems, ultra-fast lasers, motion capture system, DMA, DSC, TGA, XPS, FTIR, NMR, XRD, µ-Raman, fluorescence spectrometer, AFM, FIB/SEM, and atomic resolution TEM. A Class 10000 microelectronics clean room facility, including e-beam lithography, sputter deposition, PECVD, LPCVD, etch, ash and evaporation, is available for student projects and research.

Machine Shop

The Mechanical Engineering Machine Shop gives students the experience of fabricating custom mechanical components or systems for class assignments, research and industry sponsors. The shop houses 10 computer stations with CAD software, several (CNC) computer numeric control milling machines, lathes, welding machines, different types of saws, a CNC and manual plasma cutter, precision measuring equipment and numerous hand tools.

University Facilities

A campus map can be found on the university website: http://www.utdallas.edu/maps/

Office of Graduate Studies

The Office of Graduate Studies is located in the Founders Annex corridor, at FA 3.104. The staff in this office oversee degree requirements and develop and implement educational policy. Students will find helpful information and important deadlines on the Office of Graduate Studies website: http://www.utdallas.edu/dept/graddean/index.htm

Computer Labs

Computer Labs for student use can be found on campus in the following locations:
Solarium Engineering Open Access Lab (ECSN 4.324)

Eugene McDermott Library

The McDermott Library is a valuable resource for all students; housing books, reference material, a copy center and study areas.
Multicultural Center
The Multicultural Center is committed to providing quality cultural programs, educational resources and support services to the UT Dallas community.

Health Center
A health center is available to meet medical needs of students. A full description of the services offered by the health center can be found on the university website: http://www.utdallas.edu/healthcenter/

Student Counseling Center
The Student Counseling Center provides programs and services designed to assist students with managing academic and personal demands more effectively.

Student Union
The Student Union has numerous facilities and offices of interest to all students. In it are four private meeting rooms, lounges, three food service areas, billiards and table tennis, and video game room. The Union is also home to the Comet Center, the Student Union and Activities Advisory Board (SUAAB), Child Care Center and Student Government. The Student Union offers opportunities for students, faculty and staff to relax, eat, have fun, learn, socialize and become an active part of the UTD community.

Visitor Center and University Bookstore
The Visitor Center and University Bookstore building includes amenities such as a coffee shop, the Technology Store, the Copy Center and a multipurpose room.

Activity Center
The Activity Center is available to all students, faculty and staff and contains a fitness center, four racquetball courts, two squash courts, four basketball courts, and a 25-yard swimming pool.

Career Center
Career Center counselors are available to assist students with the preparations of job searching. https://www.utdallas.edu/career/students/

Online Information Resources
Information on NetID/password issues, email accounts, wireless network setup and general information on computer related problems can be found on the Information Resources website: http://www.utdallas.edu/ir/
Application and Admission to Graduate Program

Application Process
A student applying for admission to the Mechanical Engineering Graduate Program must submit an application form and relevant supporting documentation to the UTD Office of Admission and Enrollment Services to be considered for admission and any form of university and school support, such as teaching assistantships and research assistantships.

It is the applicant’s responsibility to see that all parts of an application have arrived at UTD. Application status and receipt of materials may be checked via the online Applicant Center in Galaxy: http://www.utdallas.edu/status/

Requirements for Admission
The PhD in Mechanical Engineering is awarded primarily to acknowledge the student’s success in an original research project, the description of which is a significant contribution to the literature of the discipline. Applicants for the doctoral program are therefore selected by the Mechanical Engineering Graduate Committee on the basis of research aptitude as well as academic record. Applicants for the doctoral program are considered on an individual basis.

The following are guidelines for admission to the PhD program in Mechanical Engineering:

- A master’s or bachelor’s degree in engineering or one of the natural sciences from an accredited U.S. institution, or from a comparable international university
- A grade point average of 3.3 or better on a 4-point scale.
- GRE scores of 150, 160 and 4 for the verbal, quantitative and analytical components, respectively, are advisable based on our experience with student success (See also UTD requirements for English proficiency.)
- Three letters of recommendation from individuals who are familiar with the student’s record, and are able to judge the candidate’s probability of success in pursuing doctoral study in Mechanical Engineering.
- A statement of purpose describing motivation for doctoral study and how it relates to their professional goals.
- A detailed resume of all education and work history.
- All students originating from countries where English is not one of the official national languages must submit an acceptable English proficiency exam score. Minimum acceptable score guidelines can be obtained on the Graduate Admissions webpage for international students: http://www.utdallas.edu/admissions/graduate/international/toefl.php
Achievement of specified minimum scores on standardized tests is not sufficient to ensure admission. The ME program faculty may change these criteria in order to improve the quality of the ME Graduate Program.

Student’s whose preparation is deficient in some respects will be required to take leveling or prerequisite courses.

For students who are interested in pursuing a PhD but are unable to attend school full-time, there is a part-time option. The guidelines for admission to the program and the degree requirements are the same as for full-time PhD students.

If a student was originally admitted into the program as a MS student and wishes to be considered for admission to the doctoral program upon completion of the MS, they must, at minimum, submit a new application, statement of purpose, and three letters of recommendation to the program by stated deadlines and be admitted into that program in accordance with the normal admission standards.

Non-Degree Seeking Option
Students who lack sufficient mechanical engineering background and/or fail to meet other program requirements may be eligible for admission under the Graduate Non-Degree Seeking program. A non-degree-seeking student must meet the same academic eligibility requirements and English proficiency requirements as ME graduate degree seeking students. Non-degree-seeking students who are ultimately admitted to a degree program may transfer no more than 15 credit hours of coursework taken as a non-degree student to that degree program. Students should consult the graduate catalog for additional details on the non-degree seeking option.

Types of Admission

Conditional Admission
Conditional admission may be granted to applicants who are deficient in undergraduate course work considered essential for graduate study. Graduate students, admitted on a conditional basis, will be notified in their department welcome letter of the deficiencies that must be corrected in order to attain full graduate standing. Conditionally admitted graduate students must meet with the Graduate Program Administrator each semester, prior to registration, to determine the remaining deficiencies in their academic program and have their course plan approved.
Funding Opportunities

Full-time graduate students have three options for financial assistance through the Department of Mechanical Engineering and all three are highly competitive. (Part-time students are not eligible for financial assistance.) Students desiring financial assistance are encouraged to apply to our graduate program as early as possible.

**Jonsson School Graduate Study Scholarship** is a $1,000 competitive, merit-based scholarship awarded to incoming graduate students during the fall semester. All students entering MS or PhD studies in mechanical engineering are eligible to apply. The Jonsson School Graduate Study Scholarship Application can be found on the Jonsson School Scholarship page online.

**Teaching Assistants (TAs)** are selected and supported by the Mechanical Engineering Department based on student’s academic merit and prior research experience. After admission to the ME Department, students may be considered by the department’s selection committee for teaching assistantships. If selected for a TA position in their first semester, new students will be notified by an email sent to their UT Dallas e-mail address. Current students will be required to submit a TA application each semester they would like to be considered for a TA position. TA applications can be completed through the electronic application found [here](#), and must be submitted to the Mechanical Engineering Department office (ECSN 2.7).

**Research Assistants (RAs)** are supported by individual mechanical engineering faculty through faculty member’s research grants. Prospective students may contact faculty members directly to discuss their research interests and possible RA support.

**Time Limits**: The maximum period of teaching assistantship support of students enrolled in a doctoral program is twelve semesters, whether long or summer, or one hundred doctoral level semester hours.
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Registration

Students pursuing a full-time program of graduate study should register for a minimum of nine credit hours each long semester and six credit hours each summer semester (registration in summer semesters is optional). General registration requirements are available in the Graduate Catalog and on the University Registrar’s website: http://www.utdallas.edu/student/registrar/

All PhD students are required to meet with their research advisor to discuss course selection and obtain approval on a registration form prior to registering every semester. All schedule changes (add/swap/drop) must be submitted on a signed registration form along with research advisor approval.

PhD students may register through the graduate program administrator by submitting a signed registration form or by emailing a complete registration request from their UTD email account. In email requests, students must provide the course title and section, class number, instructor, semester of request, and research advisor approval. Email registration requests are only accepted if the above information is included and if the request is sent from their UTD email account.

Occasionally, there are “holds” placed on student accounts. Holds most commonly result from missing documents, unpaid fees, or financial aid issues. All holds must be resolved before the student can register. It is important that students review their account regularly and take care of any holds as quickly as possible.

Registration for Research and Dissertation Courses
Permission from the faculty member is required prior to registration in Advanced Research or Dissertation hours. Approval can be supplied on a paper registration form or through an email request.

   MECH 8V70 Advanced Research in Mechanical Engineering
   MECH 8V99 Dissertation

Registration Change Procedure (Add/Drop)
Courses may be dropped online through the last day to withdraw, as designated by the Registrar on the Academic Calendar. Courses may be dropped without entry to the academic record until the date designated as such, normally within the first three weeks of the semester; after this date, the course will be graded W or F, at the discretion of the instructor.
Degree Plan and Academic Standing

All students must submit an approved degree plan within the first two semesters of active enrollment in the program. The purpose of this plan is to show how and when requirements will be met. Degree plans should be initiated by the student and research advisor with the guidance of the ME associate department head. The degree plan is a working document and may be updated regularly to reflect the student’s developing research focus and career goals.

The PhD program in Mechanical Engineering requires a minimum of 78 semester credit hours beyond the baccalaureate degree. The breakdown is shown in the table below.

<table>
<thead>
<tr>
<th>Category</th>
<th>Semester Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Required Core Courses</td>
<td>12</td>
</tr>
<tr>
<td>Prescribed Electives</td>
<td>12</td>
</tr>
<tr>
<td>Math electives</td>
<td>6</td>
</tr>
<tr>
<td>Free Electives</td>
<td>12</td>
</tr>
<tr>
<td>Dissertation</td>
<td>6 (minimum)</td>
</tr>
<tr>
<td>Other: Research in Mechanical Engineering</td>
<td>30 (minimum)</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>78 (minimum)</strong></td>
</tr>
</tbody>
</table>

A PhD student in ME student must take one core course from each of the four concentration areas, receive a grade of B- or better in each of these core courses and must maintain a core GPA of at least 3.0 to remain in good standing and satisfy the degree requirements.

**Dynamic Systems and Control**

MECH 6300 (EECS 6331, SYSM 6307) Linear Systems  
MECH 6314 (SYSM 6306, BMEN 6372) Engineering Systems: Modeling and Simulation

**Manufacturing and Design Innovation**

MECH 6303 Computer Aided Design

**Mechanics and Materials**

MECH 6306 Continuum Mechanics  
MECH 6350 Advanced Solid Mechanics

**Thermal and Fluid Sciences**

MECH 6370 Incompressible Fluid Mechanics  
MECH 6373 Convective Heat Transfer  
MECH 6374 Conductive and Radiative Heat Transfer
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Prescribed Electives within Concentration Areas
A PhD student in mechanical engineering must take at least four courses from the list of prescribed elective courses in one of the four areas of concentration. Upon approval from the student’s research advisor and Mechanical Engineering Graduate Committee, a qualified student can take other courses offered by UT Dallas to satisfy the requirements on prescribed electives. The following is a list of prescribed elective courses.

Dynamic Systems and Controls (DSC)
PhD students must take at least four courses from one concentration area.

MECH 6300 (EECS 6331, SYSM 6307) Linear Systems
MECH 6311 Advanced Mechanical Vibrations
MECH 6312 (EECS 6349) Random Processes
MECH 6313 (EECS 6336, BMEN 6388, SYSE 6324) Nonlinear Systems
MECH 6314 (SYSM 6306, BMEN 6372) Engineering Systems: Modeling and Simulation
MECH 6316 (SYSE 6322) Digital Control of Automotive Powertrain Systems
MECH 6317 (SYSE 6302) Dynamics of Complex Networks and Systems
MECH 6318 (SYSE 6305) Optimization Theory and Practice
MECH 6323 (SYSE 6323, EECS 6323) Robust Control Systems
MECH 6324 (EECS 6324) Robot Control
MECH 6V29 Special Topics in Controls and Dynamic Systems

Manufacturing and Design Innovation (MDI)
PhD students must take at least four courses from one concentration area.

MECH 6311 Advanced Mechanical Vibrations
MECH 6314 (BMEN 6372, SYSM 6306) Engineering Systems: Modeling and Simulation
MECH 6317 (EECS 6302, SYSM 6302) Dynamics of Complex Networks and Systems
MECH 6318 (SYSM 6305) Optimization Theory and Practice
MECH 6330 Multiscale Design and Optimization
MECH 6333 Materials Design and Manufacturing
MECH 6334 Smart Materials and Structures
MECH 6335 (OPRE 6340) Flexible Manufacturing Strategies
MECH 6337 (SYSM 6301) Systems Engineering, Architecture and Design
MECH 6338 Reliability-Based Design
MECH 6341 (EEMF 6348, MSEN 6348) Lithography and Nanofabrication
MECH 6347 (EEMF 6382, MSEN 6382) Introduction to MEMS
MECH 6348 (EEMF 6322, MSEN 6322) Semiconductor Processing Technology
MECH 6353 Computational Mechanics
MECH 6354 Experimental Mechanics
MECH 6V49 Special Topics in Manufacturing and Design Innovation
Mechanics and Materials (MM)
PhD students must take at least four courses from one concentration area.

MECH 6306 Continuum Mechanics
MECH 6350 Advanced Solid Mechanics
MECH 6351 Finite Element Techniques I
MECH 6353 Computational Mechanics
MECH 6354 Experimental Mechanics
MECH 6355 Viscoelasticity
MECH 6356 Fracture Mechanics
MECH 6367 (MSEN 6310) Mechanical Properties of Materials
MECH 6368 (MSEN 6350) Imperfections in Solids
MECH 6V69 Special Topics in Mechanics and Materials

Thermal and Fluid Sciences (TFS)
PhD students must take at least four courses from one concentration area.

MECH 6370 Incompressible Fluid Mechanics
MECH 6371 Computational Fluid Dynamics
MECH 6372 Turbulent Flows
MECH 6373 Convective Heat Transfer
MECH 6374 Conductive and Radiative Heat Transfer
MECH 6375 Boiling Heat Transfer and Two-Phase Flow
MECH 6376 Experimental Thermal and Fluid Dynamics
MECH 6377 Advanced Thermodynamics
MECH 6383 (EEMF 6383, PHYS 6383) Plasma Science
MECH 6V89 Special Topics in Thermal and Fluid Sciences
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Mathematics Electives: six semester credit hours

MATH 6303 Theory of Complex Functions I
MATH 6313 Numerical Analysis
MATH 6315 Ordinary Differential Equations
MATH 6318 Numerical Analysis of Differential Equations
MATH 6319/MATH 6320 Principles and Techniques in Applied Mathematics I and II
MATH 6308 Inverse Problems and Applications
MATH 6321 Optimization
MATH 6340 Numerical Linear Algebra
MECH 6391 (EEGR 6381) Computational Methods in Engineering
MECH 6392 Advanced Mathematics for Mechanical Engineers I
MECH 6393 Advanced Mathematics for Mechanical Engineers II
STAT 6311 Statistical Inference I
STAT 6339 Linear Statistical Models
STAT 6341 Numerical Linear Algebra and Statistical Computing
MATH 7313 Partial Differential Equations I

Upon the approval of a student’s research advisor, a qualified student can request to take other graduate courses in mathematics not listed above.

A PhD student in mechanical engineering must take at least four additional graduate level courses to satisfy their free electives; with the exception of 5000-level courses, which will not count towards the mechanical engineering PhD degree plan. Aside from the cross-listed courses in the prescribed elective section of the ME PhD degree plan, courses offered by the School of Management (OPRE, FIN, MKT, OB, etc.) will not be counted towards the ME PhD degree plan (this includes courses cross-listed with Systems Engineering (SYSM) and taught by SOM faculty). All electives must be approved by the PhD student’s research advisor.

Neither a foreign language nor a minor is required for the PhD. However, the student’s supervisory committee may impose these or other requirements that it believes are necessary and appropriate to the student’s degree program. A qualified student may request waivers on required courses from the student’s research advisor and the Mechanical Engineering Graduate Committee. The credit hours for those waived courses must be fulfilled by other courses approved by the student’s research advisor and the Mechanical Engineering Graduate Committee.
Important: Students who enter the mechanical engineering doctoral program are not automatically awarded a MS degree upon completing the degree requirements. Students wishing to obtain a master’s degree prior to completion of the PhD are required to file the “Addition of Master’s degree for Doctoral Students” form at least two semesters prior to the semester in which they plan to graduate. Along with this request, students must submit an approved MS degree plan form to the graduate program administrator.

Graduate Transfer Credit Policies
A PhD student who has completed previous graduate coursework comparable to the curriculum of the UT Dallas Graduate Mechanical Engineering program may submit a request to have their coursework considered for transfer credit. Transfer decisions are made in consultation with the research advisor and the graduate committee. Final transfer credit determinations will also be awarded in accordance with the policies and procedures outlined in the Graduate Catalog after a review of official transcripts. Transfer of graduate level credit into a doctoral program in mechanical engineering is limited to a maximum of twenty-seven semester credit hours of graduate coursework.

To qualify for transfer of credit of any class, the grade earned in the course must be a B or better from an accredited college or university, and the course must not be a correspondence or extension course. In most cases, transfer courses will be substituted for elective credit, lessening the required hours needed for the PhD. In some cases, credit may be awarded for a specific course at the discretion of the graduate committee, provided that an official transcript and a syllabus accompany the transfer request. Such decisions are made on a case-by-case basis.

All requests for transfer of credit should be approved by the student’s research advisor on the Transfer of Credit Request form, along with an official degree plan, and submitted to the graduate program administrator within the first two semesters of active enrollment in the program; however, acceptance of transfer of credit hours will not occur until after the student has completed nine semester credit hours at UT Dallas with a GPA of at least 3.0. All petitions must be processed and approved no later than the semester prior to the student’s anticipated graduation.

Submission Deadlines:  
Fall 2016 – October 14  
Spring 2017 – March 10
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Time Limits
All requirements for the doctoral degree must be completed within one ten-year period. Students whose master’s degrees are accepted for credit toward a PhD must complete all requirements for the doctoral degree within one eight-year period. Work exceeding these limits, whether done at this university or elsewhere, will not count towards the degree. Exceptions to time limit specifications must be approved by the Dean of Graduate Studies.

Catalog Policy
Provided the requisite courses continue to be offered, students are bound by the coursework requirements of the catalog in force at the time of their admission, within a six-year limit for the completion of the master’s degree and ten years for the doctoral degree. This regulation applies to specific coursework and the number of credit hours for the academic degrees set forth in the catalog. All other requirements will change or be continued with the issuance of supplements to the graduate catalog and subsequent revisions to the handbook.
Academic Standing
Registration in the graduate programs beyond the first semester (or summer session) is contingent on the student's being in good academic standing based on three main factors:

- Satisfactory progress in meeting admission conditions that were imposed at the time of admission
- Maintenance of a 3.0 cumulative grade point average
- Satisfactory progress in meeting program degree requirements

If, at the end of a semester, a student's cumulative grade point average is below 3.0, the student will be placed on academic probation. The student must earn sufficient grade points during the next two semesters of registration to raise the cumulative grade point average to at least 3.0 exclusive of incomplete (I) grades. Failure to achieve this 3.0 cumulative grade point average will result in immediate dismissal from the University.

While on academic probation, students will not be permitted to register in courses until the current semester grades have posted and the student has received permission from their research advisor on a registration form. The student will also need to meet with the graduate program administrator at the end of each semester they are on probation, prior to registration, until the student has successfully raised their GPA to a 3.0 or better.

Graduate Grading and Grade Point Average
The following grading scale is used in all Graduate coursework at the University:

<table>
<thead>
<tr>
<th>GRADE</th>
<th>GRADE POINTS PER SEMESTER HOUR</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>4.00</td>
<td></td>
</tr>
<tr>
<td>A-</td>
<td>3.67</td>
<td></td>
</tr>
<tr>
<td>B+</td>
<td>3.33</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>3.00</td>
<td></td>
</tr>
<tr>
<td>B-</td>
<td>2.67</td>
<td></td>
</tr>
<tr>
<td>C+</td>
<td>2.33</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>2.00</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>0.00</td>
<td>Failure of either a Pass/Fail or Graded Course</td>
</tr>
<tr>
<td>I</td>
<td>Incomplete</td>
<td>Grades of I, P, &amp; W do not produce grade points</td>
</tr>
<tr>
<td>P</td>
<td>Pass</td>
<td>Grades of I, P, &amp; W do not produce grade points</td>
</tr>
<tr>
<td>W</td>
<td>Withdraw</td>
<td>Grades of I, P, &amp; W do not produce grade points</td>
</tr>
</tbody>
</table>
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Doctoral Program Requirements

In addition to course requirements, PhD students are required to complete the following:

- **Qualifying Exam (QE):** Tests fundamental knowledge in mathematics and one concentration area in mechanical engineering.
- **Comprehensive exam (CE):** Written dissertation proposal and an exam given by candidate's supervisory committee.
- **Final Exam:** Completion of a major research project culminating in a dissertation demonstrating an original contribution to scientific knowledge and engineering practice. The dissertation will be defended publicly. The rules for this defense are specified by the Office of the Dean of Graduate Studies.

Typical Timeline for Coursework, Qualifying Exam, and Comprehensive Exam

The ME faculty expect students to make consistent progress toward the PhD degree. The following timeline is expected of doctoral students. In particular, students must schedule the Qualifying Exam and Comprehensive Exam within the timeframe detailed below.

**Courses** – Depending on the amount of applicable prior Master’s coursework, doctoral courses are normally completed in the first two and a half years.

**Qualifying Exam** – The Qualifying Exam is to be taken within three long semesters, or prior to completing 27 hours, in the doctoral program. The exam is given twice a year, during the fall and spring semesters.

**Comprehensive Exam/Dissertation Proposal** – This exam is to be completed within one year after passing the Qualifying Exam.

**Milestones Agreement Form**

Doctoral study at UTD includes a series of milestones. The key milestones include the completion of required coursework, successfully passing the qualifying examination, preparation and defense of the dissertation proposal (comprehensive examination), and completion and defense of the dissertation. The Milestones Agreement Form defines the specific requirements of the mechanical engineering doctoral program and outlines the expected timeline for degree completion. The student and their research advisor will review and sign this form by the end of the student’s first semester in the program and submit it to the Mechanical Engineering Department office. Students who fall behind risk loss of assistantship support or dismissal from the PhD program.
Doctor of Philosophy in Mechanical Engineering

<table>
<thead>
<tr>
<th>PhD Milestone Timeline</th>
<th>Sem 1</th>
<th>Sem 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>First Year</strong></td>
<td>o Select Faculty Advisor</td>
<td>o Register in MECH 6393 Advanced Mathematics for Mechanical Engineers II</td>
</tr>
<tr>
<td></td>
<td>o Register in MECH 6392 Advanced Mathematics for Mechanical Engineers I</td>
<td>o Complete Transfer of Credit Request form (if applicable)</td>
</tr>
<tr>
<td></td>
<td>o Complete Milestone Agreement Form</td>
<td>o File official Degree Plan</td>
</tr>
<tr>
<td></td>
<td></td>
<td>o Research Area Focused</td>
</tr>
<tr>
<td><strong>Second Year</strong></td>
<td>o Qualifying Exam</td>
<td>o Dissertation Committee Meeting</td>
</tr>
<tr>
<td></td>
<td>o Dissertation Committee Approved</td>
<td>o Draft defense proposal (CE)</td>
</tr>
<tr>
<td><strong>Third or Fourth Year</strong></td>
<td>o Final draft of proposal sent to committee</td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Comprehensive Exam completed</td>
<td></td>
</tr>
<tr>
<td><strong>Fifth Year</strong></td>
<td>o Final draft of Dissertation submitted to committee</td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Dissertation defense successfully completed</td>
<td></td>
</tr>
</tbody>
</table>

**Qualifying Examination**

Students are required to sit for the mechanical engineering qualifying exam within three long semesters after entering the program, or prior to completing twenty-seven credit hours in the program. Credit hours transferred from another university will count towards the twenty-seven credit hour requirement. Students must have an official degree plan on file and must be registered for at least three semester credit hours of graduate coursework during the semester in which he or she wishes to take the qualifying examination. Students on funding may need to take more hours as required by their student appointments and should consult with their research advisor for appropriate classes to take during the semester they plan to complete the exam. A student should verify these minimum requirements and ensure they are in good standing at the university prior to declaring their intent to sit for the examination.

The qualifying exam will test student’s knowledge in the following areas:

- Mathematics
- One concentration area in mechanical engineering, chosen by the student and approved by the student’s research advisor on the PhD degree plan

The following is a list of the four concentration areas to select from: (1) Dynamic Systems and Controls (DSC); (2) Mechanics and Materials (MM); (3) Thermal and Fluid Sciences (TFS); (4) Manufacturing and Design Innovations (MDI). Upon successful completion of the Qualifying
Examination in a selected concentration area, the student will no longer be eligible to change their concentration area on the PhD degree plan.

The exam takes place over two days. Students are not to bring any outside materials to the exam (no books or notes). On each of these two days, a three-hour written exam is given in one continuous sitting.

The qualifying exam will be offered twice per year, once in the fall and again in the spring. Students are strongly encouraged to meet in advance with their research advisor to help direct their studying and preparation for these examinations.

Students must announce their intent to take the qualifying exam by submitting an “Application for Doctoral Qualifying Exam” form to the Mechanical Engineering Department office within the first three weeks of the semester they intend to sit for the exam.

The questions are chosen by concentration area committees and an ad-hoc math committee. The exam will be graded, and feedback provided to the students by the committee as to the student’s individual performance on the examination in all areas after the conclusion of the grading period, which may take several weeks. The committee’s composition may change from year to year, with at least one member remaining on for the following year to maintain continuity in the qualifying exam process. Questions may also change from semester to semester.

Grading will be pass/fail. Students in the mechanical engineering program who fail the examination on the first attempt must retake the failed portion(s) within one year, but preferably by the end of the next long semester. Students failing the second examination will not be allowed to pursue a doctoral degree in the program and will be formally dismissed. Per university policy, under no circumstances will a third examination be allowed. Students who are funded with assistantships may, at the discretion of the program head and associate department head, lose their funding if they fail any area of the first exam. Funding may be reinstated following successful completion of the retake.

### Qualifying Exam Timeline

(long semesters, spring/fall)

<table>
<thead>
<tr>
<th>Weeks 2-3</th>
<th>Application due with identification of chosen concentration area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 11</td>
<td>Written exams (March/November)</td>
</tr>
<tr>
<td>Week 13</td>
<td>Announcement of QE results</td>
</tr>
</tbody>
</table>
Doctoral Candidacy and Dissertation

Doctoral Candidacy
Students will enter into doctoral candidacy upon successful completion of the Qualifying Examination, maintaining the GPA requirements in PhD level organized courses, and the assignment of an approved supervising committee through the submission of the Committee Appointment Form signed by all members.

Supervising Committee
The supervising committee will oversee and assist the student in developing a dissertation proposal, conducting research related to the dissertation, and reviewing and evaluating the written dissertation and oral defense. Students should form a supervising committee by the beginning of their third semester. The supervising committee consists of four UTD faculty members with one of the four designated as the Chair. Additional faculty from inside or outside the university may be selected; however, no more than one external member will be approved. At least half of the committee members must be mechanical engineering faculty (or affiliate faculty members). The composition of the supervising committee must follow the guidelines contained in the UT Dallas policy memorandum, “Policy on Procedures for Completing a Graduate Degree,” which is located on the Graduate Studies website.

When the committee has been formed, the student submits the Committee Appointment Form signed by the proposed members of the committee to the Mechanical Engineering Graduate Program Administrator. Approval has to be first made by the Graduate Studies Committee in the department office. Final approval of the supervising committee is made by the UT Dallas Dean of Graduate Studies.

To ensure that the supervising committee continues to play a role in contributing to the research, a meeting of the dissertation committee must occur at least once annually. The University requires an annual meeting and report.

Comprehensive Exam/Dissertation Proposal
The comprehensive exam consists of completing an oral exam given by the candidate’s supervising committee, and submitting a written dissertation proposal to the supervising committee at least two weeks before the oral exam.

When the committee Chair is satisfied with the proposal and believes the student is ready to be formally evaluated, the student will present their dissertation proposal to the supervising
committee. The presentation is followed by an oral exam consisting of questions from the general audience in open session, and from the supervising committee in a closed session. The supervising committee will determine whether the student is adequately prepared and has the ability to conduct independent research and sign the Comprehensive Examination Report form. The student will submit this form to the Mechanical Engineering Graduate Program Administrator.

Students who fail the first oral defense of their dissertation proposal must re-defend before the end of the following semester. Students who fail the oral defense of their dissertation proposal a second time or who fail to hold the defense prior to the end of the following semester will be dismissed from the program. A student must pass the comprehensive exam at least one semester before the Final Exam.

**Final Exam/Doctoral Dissertation**

Each doctoral candidate must prepare and submit a major research project culminating in a dissertation demonstrating an original contribution to scientific knowledge and engineering practice. The rules for this defense are specified by the Office of the Dean of Graduate Studies. The dissertation will be defended publicly.

The presentation and defense of the Dissertation will constitute the Final Oral Examination for the doctoral candidate. Specifics on the scheduling and conduct of the examination are contained in the "Checklist for Final Submission of Doctoral Dissertation." The student must file the Request for Final Oral Examination form with the Office of Graduate Studies two weeks prior to the defense. A copy of the dissertation must be given to each committee member two weeks in advance of the exam. This copy should be in a form so that it could be turned in as the final version. It should not be left for the committee to make major corrections and revisions in spelling, syntax, organization, or content of dissertation. The initial phase of the examination will be open to the public. Following the public presentation, the candidate will be examined by the members of the examining committee. This part of the examination is not open to the public. The examination will focus primarily on the candidate’s research contribution, although aspects of the general field in which the candidate’s research was conducted may also be covered.

One of five possible results of the examination will be reported: (1) passed the oral examination and manuscript accepted, (2) passed the oral examination and manuscript accepted pending specified revisions, (3) second oral examination required, but manuscript accepted or accepted with specified revisions, (4) major revisions of the manuscript and a second oral examination required, or (5) oral examination failed, manuscript not accepted and the committee recommends dismissal from the program.
If a recommendation for re-examination is made, the second Final Oral Examination must be taken between six months and one year after the first examination. In no cases will a third Final Oral Examination be given.

**Important:** If a doctoral student is entering into his/her last semester, will orally defend the Dissertation, anticipates having all final materials submitted to the graduate school by the deadline for binding, and plans to graduate that semester, the student may enroll in as little as one credit hour. If for some reason the student does not pass the final oral exam or has too much to correct in the final piece by the deadline, he or she may not use the one hour rule a second time and must enroll in three hours the following semester in order to finish. This is applicable to all doctoral students.

**Career Advising**

Career advising and job search resources are available to mechanical engineering students through the UT Dallas Career Center. The Engineering and Computer Science Career Consultant can provide assistance with interview preparations, resume writing, and tools for conducting an effective job search. Students are encouraged to schedule an appointment with the ECS Career Consultant before graduating.

**Graduation**

In the semester a student intends to graduate, there are several important deadlines they must meet and fees that are to be paid. Students should check the Office of Graduate Studies website and the University Registrar’s website for these deadlines and fees.

All graduate students have the responsibility to notify the graduate program administrator in the mechanical engineering department office of their intent to graduate at least one semester prior to their expected graduation to ensure that they have met all departmental and university requirements.

Students must apply for graduation by the posted deadline through their Galaxy account.
APPENDICES

A. Acknowledgment of Policies Form
B. Milestones Agreement Form
C. Mechanical Engineering PhD Degree Plan
D. Transfer of Credit Request Form – MS to PHD
E. Committee Appointment Form
F. Qualifying Examination Study List
G. Qualifying Examination Application
H. Comprehensive Examination Checklist
I. Request for Comprehensive Examination
J. Comprehensive Examination Report
K. Request for Final Oral Examination
L. Final Oral Examination Report
M. Graduation Checklist
APPENDIX A

Acknowledgment of Policies Form
Mechanical Engineering Graduate Program
The University of Texas at Dallas

Master’s & PhD Acknowledgment of Policies Form
**All students must complete, sign, and date this form upon entrance to the Graduate ME Department**

<table>
<thead>
<tr>
<th>Name (Last, First):</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>UTD ID Number:</td>
<td></td>
</tr>
<tr>
<td>Program Start (semester &amp; year):</td>
<td></td>
</tr>
</tbody>
</table>

Program of study:  
□ MS  □ PhD

Degree plan (check one):
□ Dynamic Systems and Controls (DSC)
□ Manufacturing and Design Innovation (MDI)
□ Mechanics and Materials (MM)
□ Thermal and Fluid Sciences (TFS)

Prerequisites I was assigned in my admission letter/email (check all that apply):
□ Leveling Courses: ________________________________
□ Other: _________________________________________

By initialing each item below, I confirm that I have read and understand the following policies of The University of Texas at Dallas and the Graduate Mechanical Engineering Department:

□ I must complete all assigned prerequisites unless it has been officially waived by the department or is not a requirement of my degree plan.

□ I must meet with a Faculty Advisor at least once a year to be advised.

□ There is a 6-year window to complete all MS coursework. *MS Only

□ There is a 10-year window to complete all PhD coursework. *PhD Only


□ I must have a core GPA ≥ 3.0 and a cumulative GPA ≥ 3.0 to graduate.

□ I know a course may be repeated one time and I can repeat no more than three courses.

□ I must make up any incomplete (I) grades by the deadline or it will turn into an F on my transcript.

□ I know as a PhD student I must add the correct MS program 2 semesters before I intend to graduate with my MS. *PhD Only

□ I know that if I miss three or more lectures in the beginning of any semester, I may be dropped or reassigned to another course in that semester.

□ I know I cannot enroll in courses while on Academic Probation until the current semester grades are posted and I have permission from my Faculty Advisor.

________________________________________   ___/___/____
Student Signature                     Date
APPENDIX B

Milestones Agreement Form
Milestones Agreement Form

Mechanical Engineering

Student Name:

This form is provided for the purpose of informing students about the academic milestones that they will be expected to reach in order to earn their PhD (or AUD) degree as well as when they are expected to complete these milestones. Students are expected to reach each milestone within the specified time period in order to make satisfactory progress through the program. Students who are not making satisfactory progress may lose funding, be placed on academic probation, or be dismissed from the program.

Academic Advising

Upon entering the Mechanical Engineering program, each student must be accepted by a faculty advisor within one long semester. The advisor will be a member of the program department. In the event that a student must change faculty advisors, the student will be given no more than one semester to locate a new faculty advisor before being dismissed from the program.

- The advisor will provide the student with guidance and mentoring and will seek the assistance of other faculty and graduate school resources when necessary to support the student’s academic and career development.
- The advisor will ensure that a mutually agreed upon set of expectations and goals for the student are in place and assessed periodically.
- The advisor will help the student assemble a thesis/dissertation committee.
- The advisor will provide career advice and links to information on previous graduate placement.
- The advisor will be accessible to give advice and feedback on career goals.

Academic advising includes the following elements that are designed to ensure that students remain in good academic standing and make satisfactory progress through the program:

- Annual reviews between student and advisor. The results of this review will be included in the program’s annual doctoral progress report.
- Suggestions on course selection
- Review of Degree Plan to determine if modifications are necessary
- Clarification of the timetable for completing any remaining course requirements, examinations, and other requirements
- Assistance in understanding the requirements for successful completion of dissertation
Requirements for all Students in the ME Program

<table>
<thead>
<tr>
<th>Milestone</th>
<th>Expected Time of Achievement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review of Student’s Progress with (advisor, Doctoral studies committee)</td>
<td>Annually</td>
</tr>
<tr>
<td>Successful completion of oral and/or written qualifying exam</td>
<td>Within 3 long semesters</td>
</tr>
<tr>
<td>Relevant Coursework Successfully Completed</td>
<td>99SCH</td>
</tr>
<tr>
<td>Dissertation Committee Appointed and Approved</td>
<td>Within 50SCH</td>
</tr>
<tr>
<td>Research Protocols and/or IRB Approval (as applicable)</td>
<td>99SCH</td>
</tr>
<tr>
<td>Dissertation Proposal Completed and Approved</td>
<td>99SCH</td>
</tr>
<tr>
<td>Dissertation Completed and Approved by Committee</td>
<td>99SCH</td>
</tr>
<tr>
<td>Dissertation Accepted by Graduate School</td>
<td>99SCH</td>
</tr>
<tr>
<td>Exit Interview Completed and Submitted To SED</td>
<td>99SCH</td>
</tr>
</tbody>
</table>

Status/Progress of student’s research for fall – spring 2017 semesters:

___ Progress is satisfactory in all aspects
___ Quality of work is generally satisfactory, but student is falling behind the expected schedule; more effort is indicated
___ Progress is on schedule but quality of work needs to be improved to ensure an acceptable final product
___ Work is sufficiently behind schedule that finishing within the support or time limits is unlikely
___ Quality of work is below that expected for the degree; a large change is necessary in either the effort and result being obtained or in the degree being attempted
___ Student is committed but appears to not have the capacity to complete the degree and should be counseled to change majors or to withdraw
___ Other/additional comments______________________________________________________

___________________________________________________________________________
Degree Completion Checklist for Students

- Maintain active student status by registering for courses every fall and spring semester (may also include summer depending on program-specific requirements)
- Submit your signed Milestones Agreement Form to your advisor before the end of your first year
- Complete all required organized coursework
- Schedule and successfully complete required qualifying exams
- Select the Chair and members of your dissertation committee
- Prepare and successfully present your dissertation proposal
- Apply for Advancement to Candidacy
- Enroll in required dissertation hours and complete your dissertation
- Successfully complete your defense of your dissertation
- Submit required documentation to the Graduate School for completion and graduation

Number of remaining organized courses required for degree completion: _______________

How many doctoral hours will student have accumulated by the end of this semester ______

Currently how is the student supported?  TA □  RA □  Self-supported □

I have read this form and have had the opportunity to discuss the information contained in it with my advisor. I understand the academic milestones that I am expected to reach in order to successfully complete the ME program, as well as the expected timeline for completing these milestones.

Committee Members:

________________________________________
Supervising Professor (Print or type)
________________________________________
________________________________________
________________________________________
________________________________________
________________________________________

________________________________________                  ___________________
Print Student Name                                  UTD ID #
________________________________________                  ___________________
Student’s Signature                                  Date
________________________________________
Print Advisor Name
________________________________________                  ___________________
Advisor’s Signature                                  Date
APPENDIX C

Mechanical Engineering PhD Degree Plan
# Mechanical Engineering
## Ph.D. Approved Degree Plan

Complete one core course from each of the four groups below **Must earn "B-" & core GPA of 3.0 or better**:  
Dynamic Systems and Control (select one)

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Semester</th>
<th>Transfer?</th>
<th>Approval</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>MECH 6300</td>
<td>Linear Systems</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>MECH 6314</td>
<td>Engineering Systems: Modeling &amp; Simulation</td>
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<td></td>
</tr>
</tbody>
</table>

Manufacturing & Design Innovation (select one)

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Semester</th>
<th>Transfer?</th>
<th>Approval</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>MECH 6303</td>
<td>Computer Aided Design</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Mechanics & Materials (select one)

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Semester</th>
<th>Transfer?</th>
<th>Approval</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>MECH 6306</td>
<td>Continuum Mechanics</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>MECH 6350</td>
<td>Advanced Solid Mechanics</td>
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</tr>
</tbody>
</table>

Thermal & Fluid Sciences (select one)

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Semester</th>
<th>Transfer?</th>
<th>Approval</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>MECH 6370</td>
<td>Incompressible Fluid Mechanics</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MECH 6373</td>
<td>Convective Heat Transfer</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MECH 6374</td>
<td>Conductive Heat Transfer</td>
<td></td>
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</tr>
</tbody>
</table>

Complete at least 4 courses from the list of prescribed electives in chosen concentration area (12 hrs) Area:

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Semester</th>
<th>Transfer?</th>
<th>Approval</th>
<th>Grade</th>
</tr>
</thead>
</table>

Complete 2 courses from the list below to satisfy the mathematics elective requirement (6 hrs)

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Semester</th>
<th>Transfer?</th>
<th>Approval</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 6303</td>
<td>Theory of Complex Functions I</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH 6313</td>
<td>Numerical Analysis</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>MATH 6315</td>
<td>Ordinary Differential Equations</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>MATH 6318</td>
<td>Numerical Analysis of Diff. Equations</td>
<td></td>
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</tr>
<tr>
<td>MATH 6319-20</td>
<td>Principles &amp; Techniques in Appl. Math I &amp; II</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>MATH 6308</td>
<td>Inverse Problems &amp; their Applications</td>
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<tr>
<td>MATH 6321</td>
<td>Optimization</td>
<td></td>
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<tr>
<td>MATH 6340</td>
<td>Numerical Linear Algebra</td>
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<tr>
<td>MATH 6391</td>
<td>Computational Methods in Engineering</td>
<td></td>
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</tr>
<tr>
<td>MATH 6392</td>
<td>Advanced Mathematics for Mechanical Engineers I</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>MATH 6393</td>
<td>Advanced Mathematics for Mechanical Engineers II</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>STAT 6331</td>
<td>Statistical Inference I</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>STAT 6337-8</td>
<td>Statistical Methods I, II</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>STAT 6339</td>
<td>Linear Statistical Models</td>
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</tr>
<tr>
<td>STAT 6341</td>
<td>Numerical Linear Algebra &amp; Stat Computing</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>MATH 7313</td>
<td>Partial Differential Equations I</td>
<td></td>
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</tr>
</tbody>
</table>

** Upon approval from research advisor, a student can request to take other mathematics courses not listed above.

Approved Electives (48 hrs)

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Semester</th>
<th>Transfer?</th>
<th>Approval</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>MECH 8v70</td>
<td>Research (30 hrs)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MECH 8v99</td>
<td>Dissertation (6 hrs)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total SCH (min.78)

<table>
<thead>
<tr>
<th>Approvals</th>
<th>Signature</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Faculty Advisor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assoc. Dept. Head</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Rev. 7/16
APPENDIX D

PhD Transfer of Credit Request Form
TRANSFER OF CREDIT REQUEST – MS to PHD

This form is only for Mechanical Engineering PhD students that have already completed and been awarded a MS degree at another university. PhD students that have not been awarded an MS degree should use the general “Transfer of Credit Request” form. All transfer requests should be submitted within the first two semesters of enrollment and must be completed before the semester in which the student plans to graduate. The Department of Mechanical Engineering holds the student responsible for attaching all copies of course descriptions, syllabi, and transcripts to the transfer request and for providing official transcripts to the Office of Student Records.

Name (please type or print)Student UTD ID

Transfer credits to be applied to PhD degree at UTD.

Concentration Area: Program Start (Semester/Year):

For a course to be transferred, the student must have completed an equivalent graduate level course at another accredited university with a grade of B or better. UTD does not award transfer credit for experiential learning, performance or work experience. Transfer course grades will not be averaged into your overall UTD GPA. Applicable coursework cannot be more than 8 years old for students whose master’s degrees are accepted for full credit; or more than 10 years old for doctoral degrees.

Course(s) the student is submitting to replace the Mechanical Engineering degree requirements:

<table>
<thead>
<tr>
<th>UTD Course #</th>
<th>UTD Course Title</th>
<th>T-Course #</th>
<th>T-Course Title</th>
<th>Institution</th>
<th>Grade</th>
<th>Date Taken</th>
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To the Graduate Committee:
The applicant’s file has been reviewed and the Dissertation Advisor’s signature below certifies that the transfer credits requested are a solid basis for graduate work in our UTD program. Either the original transcript or copy of same and coursework description/syllabi are attached.

(Circle)APPROVED DENIED Need more information

(If Applicable) APPROVED- VALID UNTIL (DATE):

Dissertation Advisor Date

Mechanical Engineering Assoc. Department Head Date
CHECKLIST FOR TRANSFER OF COURSES INTO MECHANICAL ENGINEERING PHD PROGRAM:

(Check each item if it meets the approved criteria)

___ Check to be sure no more than 27 hours TOTAL have been transferred

___ Check to be sure course number is equivalent to a 6000 level course or above (cannot be an undergraduate number even if undergraduate number is approved at previously attended university for graduate credit)

___ Course was taken within 8 year time limit

___ Grade received in course was “B” or better (“P” or “Pass” grade must be equivalent to “B”)

___ Request must be submitted along with a degree plan, signed by the dissertation advisor

___ Copy of official transcript attached (only if course was completed after you applied to UTD) with course and grade marked (B or above)

___ Catalog description and/or official course outline (accredited United States universities)

___ If no catalog description is available (foreign universities only): provide an official course description signed by a university official ranking as a department chair or higher and sent directly to the UTD Mechanical Engineering Department. Also provide the name of the university official and contact information including university email address, telephone number, and fax number.

_____ A URL may also be given if the material may be currently accessed from the Internet using the given URL.

Notice: Information provided by students for reason of obtaining waivers or transfers is considered as true and accurate. If such information is found to be falsified or inaccurate, it may be grounds for cancellation of enrollment and/or disciplinary action.

Transfer credit will not be applied to a degree plan until 9 credit hours have been successfully completed at UTD.
APPENDIX E

Committee Appointment Form
COMMITTEE APPOINTMENT
GRADUATE PROGRAM

Doctoral degree__________ Master’s degree__________

____________________________________ ID#____________________________________
Student

Requests the formal appointment of the following members to serve as his/her supervisory committee:

________________________________________________________
Supervising Professor please print signature

________________________________________________________
Co-Chair (if applicable) please print signature

________________________________________________________
Committee Member please print signature

________________________________________________________
Committee Member please print signature

________________________________________________________
Committee Member please print signature

________________________________________________________
Committee Member please print signature

APPROVAL

________________________________________________________
Department Head signature date

________________________________________________________
Dean of Graduate Studies signature date
APPENDIX F

Qualifying Examination Study List
Mechanical Engineering Ph.D. Qualifying Exam

A Ph.D. student entering the Ph.D. program in Mechanical Engineering must take the qualifying exam within three long semesters. The purpose of the qualifying exam is to determine the student's potential for success in the Ph.D. program. The qualifying exam will test **Mathematics** and **one concentration area** in mechanical engineering, and will be given in fall and spring semesters. The qualifying exam consists of a three-hour written exam to test mathematics and another three-hour written exam to test one concentration area approved by the student’s dissertation advisor. A student who fails in the first attempt in qualifying exam has a second chance to take the qualifying exam in mathematics and/or the concentration area in which the student fails in the first attempt in the immediately following long semester. A Ph.D. student is required to submit a qualifying exam application form within the first three weeks of the semester when the exam is taken. The following is a list of topics and references in Mathematics, and the four concentration areas: (1) Dynamic Systems and Controls (DSC); (2) Mechanics and Materials (MM); (3) Thermal and Fluid Sciences (TFS); and (4) Manufacturing and Design Innovations (MDI).

**Mathematics**


**References:**


**Concentration Area: Dynamic Systems and Controls (DSC)**

*Systems and Controls*: Newtonian dynamics. Modeling of dynamic systems for either electromechanical systems or thermo-fluid systems. transfer functions and block diagrams, time and frequency response of dynamic systems to input commands, disturbances and noises, poles and zeros, PID and other dynamic controller functions, root locus method for controller design and stability analysis, Bode plots for stability analysis and controller design, Nyquist plot and stability. *Linear systems*: Eigenvalues/eigenvectors, state-space representations, solutions, and realizations, controllability, observability, BIBO and Lyapunov stability, state feedback controllers and state estimators.
Concentration Area: Mechanics and Materials (MM)

**Intermediate Mechanics of Materials:** Principal stresses, failure theories (various failure criteria, fracture mechanics concepts, fatigue), symmetric and unsymmetric beam bending, torsion and shear of thin-walled sections, combined loading, energy methods (unit load method, Castigliano’s theorems), two-dimensional elasticity (stress and displacement methods, boundary conditions, Airy’s stress function), torsion theories (St. Venant torsion theory, Prandtl method), and column buckling. **Continuum Mechanics:** Tensor analysis, analysis of deformation, analysis of stress, constitutive equations, material anisotropy, mechanical properties of fluids and solids, derivation of field equations, boundary conditions, and solutions of initial and boundary value problems for continua.

**References:**

Concentration Area: Thermal and Fluid Sciences (TFS)

**Fluid Mechanics:** The students should be able to apply (i) fundamental equations and dimensionless analysis to incompressible fluid mechanics problems, (ii) formulate and apply the concept of laminar boundary layer and the linear stability of laminar flows, (iii) analyze the transition from laminar to turbulent flow, (iv) formulate and apply the concept of turbulent boundary layers (iv) derive the Reynolds equations and turbulence models. The test may include problems both in the laminar regime (Poiseuille, Couette, or wind driven flows) as well as in the turbulent regime (jets, wakes, mixing layers). **Heat Transfer:** Successful demonstration of advanced-level knowledge of the macroscopic view and foundation of the three modes of heat transfer (conduction, convection and thermal radiation) is required. In addition, candidates must demonstrate the ability to conceptualize thermal systems and processes involving thermal transport phenomena. All topics in the reference can be covered excluding phase-change heat transfer (condensation, evaporation, and boiling).

**References:**
Concentration Area: Manufacturing and Design Innovations (MDI)

Component design: Engineering materials, load and stress analysis, deflection and stiffness, failure due to static loading, fatigue failure due to variable loading, cumulative damage analysis, statistical analysis in design against failure, design of shafts, bearing, gears, and joints.

Kinematic and Dynamics of Machinery: Kinematic analysis of planar mechanisms (position, velocity, acceleration), statics and dynamics of planar mechanisms, analysis and design of cams and gears. Computer Aided Design: Parametric representation of curves including Hermite cubic splines, Bezier curves and synthetic polynomial curves and non-parametric representation of curves, surface representation in CAD (synthetic: Splines and Bezier, and analytic: plane, ruled, revolution, tabulated), classification of solid models (2 ½ D, 3D and a combination 2 ½ and 3D), solid modeling approaches (half space operations, boundary representation (B-rep), constructive solid geometry (CSG), feature based), engineering drawings including classification and dimensioning of part views, assembly modeling (assembly tree, mating, top-down, bottom-up approaches).

References:

APPENDIX G

Qualifying Examination Application
Doctoral students who intend to take the Ph.D. Qualifying Examination (QE) must submit this application within the first three weeks of a semester. The student must be registered in at least 3 hours for the semester in which the QE is to be taken and be in good academic standing. Submit the completed form to the Mechanical Engineering Graduate Program Administrator.

Name: ____________________________  Student ID #: __________________

Select the exams you will be completing in ________________ (term & year):

☐ Concentration Area (circle one):  Dynamic Systems & Controls  Manufacturing & Design Innovation

☐ Mechanics & Materials  Thermal & Fluid Sciences

☐ Mathematics Exam

Student Signature: ____________________________  Date: ________________

Dissertation Advisor Signature: ____________________________  Date: ________________

Graduate Educational Background:

<table>
<thead>
<tr>
<th>Degree</th>
<th>Year</th>
<th>GPA</th>
<th>University</th>
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List organized graduate level courses you have transferred to UTD:

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<thead>
<tr>
<th>Course Name &amp; Institution</th>
<th>Sem./Year</th>
<th>Grade</th>
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Current schedule:

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<th>Course Sub. &amp; Num.</th>
<th>Course Title</th>
<th>Days &amp; Time</th>
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For Mechanical Engineering Graduate Office use only

Degree Plan: ___________  Registration status: ___________  Graduate Course GPA: ___________

Approved by: ___________  Date: ___________
APPENDIX H

Comprehensive Examination Checklist
THE UNIVERSITY OF TEXAS AT DALLAS
GRADUATE PROGRAM IN MECHANICAL ENGINEERING
COMPREHENSIVE EXAMINATION CHECKLIST

Steps to follow for the Comprehensive Examination/Dissertation Proposal:

— Submit Committee Appointment Form for approval by the Mechanical Engineering Department and Graduate Dean
  o Follow guidelines for supervising committee in the PhD Student Handbook

— After supervising committee has been approved, meet with all members to discuss the current status of your research

— Prepare a written dissertation proposal with the guidance of your committee Chair

— When complete, provide a copy of your written dissertation proposal to each member of your committee and schedule a date for your oral exam (these must be at least 2 weeks apart)

— Submit Request for Examination Form signed by all members of your committee to Mechanical Engineering Graduate Program Administrator

— Present dissertation proposal to supervising committee and complete oral exam

— Submit signed Comprehensive Examination Report to Mechanical Engineering Graduate Program Administrator

The Comprehensive Examination must be completed at least one semester before the Final Exam/Dissertation Defense.
APPENDIX I

Request for Comprehensive Examination
THE UNIVERSITY OF TEXAS AT DALLAS  
GRADUATE PROGRAM IN MECHANICAL ENGINEERING  
REQUEST FOR COMPREHENSIVE EXAMINATION

This request must be submitted to the Mechanical Engineering Department two weeks before the proposed examination date. The Comprehensive Examination must be completed at least one semester before the Final Examination.

This is to report that _______________________________, ID ______________, a candidate (Student Name) (UTD ID) for the doctoral degree in Mechanical Engineering, has completed all or most of the formal coursework as required by the Graduate Program and to request an oral comprehensive examination on ______________________________ at ___________________________ in (Month/Day/Year) (Time) ______________________________. (Building, Room Number)

Signatures of the Supervisory Committee:

<table>
<thead>
<tr>
<th>COMMITTEE CHAIR (please print)</th>
<th>SIGNATURE</th>
<th>DATE</th>
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<tr>
<td>COMMITTEE MEMBER</td>
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APPENDIX J

Comprehensive Examination Report
THE UNIVERSITY OF TEXAS AT DALLAS
GRADUATE PROGRAM IN MECHANICAL ENGINEERING
COMPREHENSIVE EXAMINATION REPORT

We, the undersigned, as the Supervisory Committee for the doctoral dissertation of

(STUDENT NAME)____________________________________

(STUDENT ID)____________________________________

Report that he/she has presented his/her proposal and we have conducted the oral examination.

EXAMINATION DATE

The student has:

1. Completed the work assigned by the Supervisory Committee.
2. Passed all examinations required by the Graduate Program in Mechanical Engineering.
3. Satisfied any other Program or School candidacy requirements.

Therefore, we are presenting him/her for doctoral candidacy at this time.

Comments/Conditions:

_________________________________________________________________

_________________________________________________________________

_________________________________________________________________

_________________________________________________________________

Signatures of the Supervisory Committee:

COMMITTEE CHAIR (PRINT)    SIGNATURE    DATE

COMMITTEE MEMBER

COMMITTEE MEMBER

COMMITTEE MEMBER

COMMITTEE MEMBER

COMMITTEE MEMBER
APPENDIX K

Request for Final Oral Examination
REQUEST FOR FINAL ORAL EXAMINATION

This form must be submitted online to https://utd-etd.tdl.org/ and must be accompanied by a PDF of the dissertation two weeks prior to date of examination. See Submission Guide for more details.

DEPARTMENT:

______________________________________________________________________________

THIS IS TO REPORT THAT THE SUPERVISING COMMITTEE FOR:

______________________________________________________________________________

(Name of the Doctoral Candidate)

has received the doctoral dissertation for the purpose of examination and now requests that the final oral examination be set for:

______________________________________________________________________________

(Month)   (Day)   (Year)   (Time)   (Place)

DOCTORAL CANDIDATE’S UTD E-MAIL: ________________________________

TITLE OF DISSERTATION: _________________________________________

______________________________________________________________________________

By his/her signature below each member of the Supervisory Committee agrees that he/she considers the dissertation and dissertation abstract to be in satisfactory form for the purpose of final examination, that he/she is agreeable to proceeding with the final examination, and that he/she is willing to attend this examination on the date specified.

COMMITTEE APPROVALS:

<table>
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<th>Print Name</th>
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<td>Supervising Professor (Print Name)</td>
<td>Signature</td>
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<th>Print Name</th>
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NAME  (ONE MEMBER OF COMMITTEE WILL BE PHYSICALLY ABSENT)

Check one if applicable:

- WILL ATTEND VIA SKYPE OR PHONE (Committee Member Remote form required)
- WILL BE ABSENT (Committee Member Absent form required)
APPENDIX L

Final Oral Examination Report
THE UNIVERSITY OF TEXAS AT DALLAS
GRADUATE PROGRAM IN MECHANICAL ENGINEERING
REPORT OF DOCTORAL FINAL ORAL EXAMINATION

We, the undersigned, as the Supervisory Committee for the doctoral dissertation of

(DOCTORAL CANDIDATE) ________________________________
(UTD ID) ________________________________

report that he/she has defended his/her dissertation and we have conducted the final oral examination.

EXAMINATION DATE

The student has:

1. Completed the work assigned by the Supervisory Committee.

2. Passed all examinations required by the Graduate Program in Mechanical Engineering.

3. Completed a dissertation which gives evidence of his/her ability to do independent research and itself constitutes a contribution to knowledge.

4. We recommend that he/she be granted the degree of Doctor of Philosophy in Mechanical Engineering.

Conditions (if any) ____________________________________________

_____________________________________________________________

COMMITTEE CHAIR (PRINT) (SIGNATURE)

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MEMBER (PRINT) (SIGNATURE)

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MEMBER (PRINT) (SIGNATURE)

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MEMBER (PRINT) (SIGNATURE)

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MEMBER (PRINT) (SIGNATURE)

cc: Committee Chair
    Student

7/16
APPENDIX M

Graduation Checklist
GRADUATION CHECKLIST

Doctoral Candidates:

- Check with your program to ensure that all necessary coursework to graduate has been completed. Your status will need to be changed to “eligible to graduate” in Galaxy.

- Enroll in a graduate level course at UTD. Doctoral students must be registered in three hours in the semester they defend. If applicable, complete in absentia form (see your department).

- Make certain to complete all incomplete grades. Check with your program office to be certain any necessary grade change forms have been received by the Records Office.

- Check with your program for any holds that may be on your student account.

- Fill out the Application for Graduation online through Galaxy by the deadline listed on the Academic Calendar.

- After you apply to graduate, you need to check your UT Dallas email on a regular basis. You will receive all correspondence regarding your graduation and commencement there.

- If after you have applied, you realize you are not going to graduate, notify the graduate program administrator in your department as early as possible.

- Make sure that the UTD Records Office has your most current mailing address to ensure that your diploma is sent to the correct location.