HANDBOOK OF DOCTORAL PROGRAM IN MECHANICAL ENGINEERING (PhD/ME):

ACADEMIC POLICIES & PROCEDURES

This Handbook provides supportive information following the official UTSA Graduate Catalog. In case any information in the Handbook conflicts with the Catalog, please refer to the Catalog.

Department of Mechanical Engineering

The University of Texas at San Antonio

Fall 2019
I. Areas of Study
The Department of Mechanical Engineering offers advanced coursework integrated with research leading to the Doctor of Philosophy degree in Mechanical Engineering. The program has four concentrations: Thermal and Fluid Systems, Design and Manufacturing Systems, Mechanics and Materials, Robotics and Controls. The Ph.D. degree in Mechanical Engineering will be awarded to candidates who have displayed an in-depth understanding of the subject matter and demonstrated the ability to make an original contribution to knowledge in their field of specialty.

II. Program Administration
The Doctor of Philosophy degree in Mechanical Engineering resides within the Department of Mechanical Engineering. The Mechanical Engineering Graduate Studies Committee administers it. The Graduate Studies Committee is responsible for curriculum enhancement, program development and promotion, student recruitment, admission, and on-going program review and provides input to the Department Chair and the graduate faculty of the department.

The Graduate Advisor of Record (GAR) is appointed by the Department Chair and with the assistance of the Program Coordinator is responsible for the routine administration of the program, advising students, maintaining records, and representing the Department in matters related to the program. Questions about degree requirements and academic policies should be directed to the Graduate Advisor of Record or the Program Coordinator.

III. Admission Requirements
The minimum requirements for admission to the Doctor of Philosophy in Mechanical Engineering degree program are as follows:

- Students must meet the University-Wide Admission Requirements as outlined in the graduate catalog.
- Official transcripts of all undergraduate and graduate coursework. Transcripts must be submitted from a regionally accredited college or university in the United States or have proof of equivalent training at a foreign institution.
- Official Graduate Record Examination (GRE) scores
- Résumé or Curriculum Vitae (CV)
- A statement of research experience, interests and goals
- Three professional and/or academic letters of recommendation attesting to the applicant’s readiness for doctoral study
- Outstanding students, who do not hold a Master’s degree, may enter the Doctor of Philosophy program on provisional status directly upon receiving a bachelor’s degree in mechanical engineering or a closely related field, with the approval of the Graduate Studies Committee. Such applicants must have a GPA of 3.5 or better in the last sixty (60) semester credit hours of undergraduate coursework in mechanical engineering or a closely related field.
IV. Financial Support and Graduate Assistantships

Financial support may be obtained through various sources and disbursed as a stipend, tuition support, and Assistantship. Please be advised that unless a written agreement is made between the funding source and student for a designated time period, financial support and assistantships are not guaranteed each semester or year of your degree program.

In order to receive a stipend, tuition support, or a competitive scholarship, the student must be registered for a minimum of 1 credit hour (including during the summer semester). Students who have been offered an assistantship must be registered a minimum of 6 credit hours during the fall and spring semesters, and 3 credit hours during the summer semester. The only exception to the assistantship requirement is if it is the student’s final semester and their registration does not meet the minimum credit hour requirement.

- **Stipend:** If you receive a stipend, this means that the funding can be disbursed as either a lump sum or on a monthly basis during the designated semester. Stipends are provided by faculty members; therefore, the details of the disbursement are their discretion. If there is an account balance, the stipend will always be applied first and foremost to the account balance.

- **Tuition Support:** Tuition support is generally provided by faculty members, and is given to students specifically for their tuition. If the amount of the tuition support exceeds the account balance, then the excess funding will not be paid to the student. Faculty members can also choose to provide partial tuition support, and the student will be responsible for their remaining account balance.

- **Graduate Assistantships:** Financial support may be secured through a Research Assistantship (RA) or a Teaching Assistantship (TA). Appointments are no more than “half-time” or 20 hours of service per week. Generally, RA and TA appointments are either 10 or 20 hours per week, but it is up to the discretion of the faculty member or Mechanical Engineering Department the specifications of the appointment. If a student is appointed for 20 hours per week, then they are qualified for in-state tuition. The financial support for RAs is provided by individual faculty members from research grants, while support for TAs is provided by the department. Applicants are encouraged to contact faculty members to seek RA positions.

- **Competitive Scholarships:** Competitive Scholarships are generally offered on a yearly basis by the Department of Mechanical Engineering, The Center for Advanced Manufacturing and Lean Systems (CAMLS), and the College of Engineering. Recipients of a competitive scholarship do earn qualification for in-state tuition, in addition to the funding amount. Competitive scholarships are awarded on a competitive basis dependent on merit credentials.
V. Degree Requirements and Program of Study

The degree requires 63 credit hours of course and research work beyond the bachelor’s degree or 42 credits beyond the master’s degree, and passing of Qualifying Examinations, Dissertation Proposal, Dissertation Defense and acceptance of the Ph.D. dissertation.

In accordance with the 2019-2021 Graduate Catalog, required coursework and the timeline for expected progress are given in Tables 1a-b and 2, respectively. In general, undergraduate courses, general education courses, and prerequisites for graduate courses are not guaranteed to count towards the required number of credit hours.

Table 1a Curriculum (for Students that have obtained a MS Degree)

<table>
<thead>
<tr>
<th>A. Common Core Courses (6 semester credit hours):</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Required course</strong></td>
</tr>
<tr>
<td>ME 6113</td>
</tr>
<tr>
<td><strong>2. Choose one of the following</strong></td>
</tr>
<tr>
<td>EGR 6013</td>
</tr>
<tr>
<td>EGR 6033</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>B. Technical Core Courses:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Among the four areas listed below, students are required to take two courses (6 semester credit hours) in their major area of study:</td>
</tr>
<tr>
<td><strong>Thermal and Fluid Systems</strong></td>
</tr>
<tr>
<td>ME 5243</td>
</tr>
<tr>
<td>ME 6613</td>
</tr>
<tr>
<td><strong>Design and Manufacturing Systems</strong></td>
</tr>
<tr>
<td>ME 5603</td>
</tr>
<tr>
<td>ME 6543</td>
</tr>
<tr>
<td><strong>Mechanics and Materials</strong></td>
</tr>
<tr>
<td>ME 5713</td>
</tr>
<tr>
<td>ME 6413</td>
</tr>
<tr>
<td><strong>Robotics and Control</strong></td>
</tr>
<tr>
<td>ME 5493</td>
</tr>
<tr>
<td>ME 6123</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C. Technical Elective Courses (6 semester credit hours):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students are required to take at least two elective courses in consultation with their Ph.D. advisor.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>D. Doctoral Research and Dissertation (24 semester credit hours):</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Seminar</strong></td>
</tr>
<tr>
<td>ME 7993</td>
</tr>
<tr>
<td><strong>2. Doctoral Research (minimum of 9 semester credit hours required):</strong></td>
</tr>
<tr>
<td>ME 7951</td>
</tr>
<tr>
<td>ME 7952</td>
</tr>
<tr>
<td>ME 7953</td>
</tr>
<tr>
<td><strong>3. Doctoral Dissertation (after admitted for candidacy) (minimum of 12 semester credit hours required):</strong></td>
</tr>
<tr>
<td>ME 7981</td>
</tr>
<tr>
<td>ME 7982</td>
</tr>
<tr>
<td>ME 7983</td>
</tr>
<tr>
<td>Total Credit Hours : 42</td>
</tr>
</tbody>
</table>
### Table 1b Curriculum (for Students that have obtained a BS Degree)

#### A. Common Core Courses (6 semester credit hours):

1. **Required course**
   - ME 6113 | Experimental Techniques in Engineering (or equivalent course with prior approval by the department)

2. **Choose one of the following**
   - EGR 6013 | Advanced Engineering Mathematics I
   - EGR 6033 | Linear and Mixed Integer Optimization

#### B. Technical Core Courses:

Among the four areas listed below, students are required to take two courses (6 semester credit hours) in their major area of study:

- **Thermal and Fluid Systems**
  - ME 5243 | Advanced Thermodynamics
  - ME 6613 | Advanced Fluid Mechanics

- **Design and Manufacturing Systems**
  - ME 5603 | Advanced Manufacturing Systems Engineering
  - ME 6543 | Machine Learning and Data Analytics

- **Mechanics and Materials**
  - ME 5713 | Mechanical Behavior of Materials
  - ME 6413 | Elasticity

- **Robotics and Control**
  - ME 5493 | Fundamentals of Robotics
  - ME 6123 | Advanced Systems Dynamics and Control

#### C. Technical Elective Courses (27 semester credit hours):

Students are required to take at least two elective courses in consultation with their Ph.D. advisor.

#### D. Doctoral Research and Dissertation (24 semester credit hours):

1. **Seminar**
   - ME 7993 | Research Seminar (3 credit hours)

2. **Doctoral Research (minimum of 9 semester credit hours required):**
   - ME 7951 | Doctoral Research
   - ME 7952 | Doctoral Research
   - ME 7953 | Doctoral Research

3. **Doctoral Dissertation (after admitted for candidacy) (minimum of 12 semester credit hours required):**
   - ME 7981 | Doctoral Dissertation
   - ME 7982 | Doctoral Dissertation
   - ME 7983 | Doctoral Dissertation

**Total Credit Hours : 63**
Table 2 Timeline of Progress

<table>
<thead>
<tr>
<th>Progress</th>
<th>To be Completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Select PhD Advisor</td>
<td>Within 9 credit hours</td>
</tr>
<tr>
<td>Pass Written Qualifying Examination</td>
<td>Within 18 credit hours</td>
</tr>
<tr>
<td>Create PhD Supervisory/Dissertation Committee</td>
<td>At least one month prior to dissertation proposal defense</td>
</tr>
<tr>
<td>Pass Dissertation Proposal</td>
<td>Time to be determined by the Supervising Professor (Advisor) and the Dissertation Committee</td>
</tr>
<tr>
<td>Pass Dissertation Defense</td>
<td>After passing dissertation proposal. Time to be determined by the Supervising Professor (Advisor) and the Dissertation Committee</td>
</tr>
</tbody>
</table>

VI. PhD Advisor

The program of study, as well as the selection of core and elective courses, must be recommended by the student’s PhD Advisor. The courses taken by students are intended to focus and support the individual’s mastery of his/her particular area of specialization. The PhD Advisor must be a tenured or tenure-track faculty member of the Mechanical Engineering Department or have an adjoint affiliation with the Mechanical Engineering Department.

VII. Written Qualifying Examinations

All students seeking a doctoral degree at UTSA must be admitted to “candidacy” in order to become eligible to continue to the dissertation component of the PhD program. The requirement for admission to candidacy is passing the qualifying examinations and dissertation proposal. The qualifying examination of the PhD/ME program consists of written questions in both common core and technical core as determined by the student’s concentration area. The qualifying examinations will be administrated in June and January every year. A student may be allowed to take the examination(s) pertaining to the subject(s) a second time either in January or June the following semester/year, if they fail the first time. However, no more than two attempts are permitted. Should a student fail the qualifying exam for a second time, he or she will be dismissed from the doctoral program. The student must follow the standard procedure to petition for reinstatement at the graduate level should he or she wish to return to the doctoral program. At the department's discretion, students may be reinstated to the MS degree. The process for petitioning for reinstatement is as follows:

A student who has been dismissed academically may petition for reinstatement after one long semester (Fall or Spring) has elapsed from the date of dismissal. Under exceptional circumstances, a petition may be considered earlier. Students are required to complete a reinstatement packet along with a letter containing all explanations, recommendations, or doctors’ statements in support of the student’s request for reinstatement and submit them to the Dean of the Graduate School on or before June 15 for Fall Semesters, October 15 for Spring Semesters, or March 15 for Summer Semesters.

The Graduate School prepares the petition for reinstatement and submits it to the Department’s
Graduate Program Committee. The Graduate Program Committee will review the petitioner’s letter and academic record and make a recommendation concerning reinstatement to the Dean of the Graduate School. If the Petition for Reinstatement is disapproved, the student may not file another petition until the following semester.

**Process of Written Qualifying Examination:** The written qualifying examination is given in June and January of each year. Upon approval by their PhD advisor, students wishing to take the examination must submit their request using the designated form to the Program Coordinator **Graduate Advisor of Record** before **Oct. 31 (for January Exam) and March 31 (for June Exam)**. The written examination will be administered in the first full week of June and the second week of January each year. Normally, the written examination is taken by students who have completed the coursework listed under sections A and B of the curriculum in **Table 1** and are in good standing. Students who fail the written qualifying examination in their first attempt may petition for a second attempt. No more than two attempts are permitted to pass all subjects of the qualifying examination.

The purpose of the qualifying examination is to ensure that students pursuing a doctoral degree in Mechanical Engineering have the essential depth and breadth of knowledge basis in their designated concentration area. The Department of Mechanical Engineering administers the written qualifying examination in the following four areas with the supporting courses:

1. **Common Core area**
   
   *EGR 6013 Analytical Techniques in Engineering* (Advanced topics in vector calculus and linear algebra)

2. **Technical Core area**
   
   a. Thermal & Fluid Systems (two subjects)
      
      *ME 5243 Advanced Thermodynamics*
      *
      ME 6613 Advanced Fluid Mechanics*
   
   b. Design & Manufacturing Systems (two subjects)
      
      *ME 5603 Advanced Manufacturing Systems Engineering*
      *
      ME 6543 Machine Learning & Data Analytics*
   
   c. Mechanics & Materials (two subjects)
      
      *ME 5713 Mechanical Behavior of Materials*
      *
      ME 6413 Elasticity*
   
   d. Robotics & Controls (two subjects)
      
      *ME 5493 Fundamentals of Robotics*
      *
      ME 6123 Advanced Systems Dynamics and Control*
The written qualifying examination includes two (2) parts: **Part 1-Common Core Area**, which is mandatory for all students, and **Part 2-Technical Core Area**, which is based on the student’s selected technical core area. The written exam is administered on the different areas in two days of the **first full week of June and the second week of January** each year. The exam for each area (Common Core, Thermal and Fluid Mechanics, Design and Manufacturing Systems, Mechanics and Materials, Robotics and Controls). The examinations are typically in the form of closed books and notes. If granted, students will be provided a formula sheet.

**The minimum (passing) grade for each area in the Common Core and Technical Core Areas are 75% and 70% respectively.** Students who do not score the minimum grade only on one of the three exams may pass the qualifying exam requirement on a conditional basis with the requirements (conditions) determined by the Graduate Program Committee. Students who pass the written qualifying exam conditionally must satisfy all additional requirements before having passed the written exam. Students must pass the written qualifying exam before they are qualified to proceed on to the proposal defense.

**VIII. Dissertation Committee**

The dissertation committee members are typically selected by the student in consultation with the PhD advisor and approved by the Graduate Advisor of Record and the Department Chair. This process should start as early as the time when the student has selected a PhD Advisor. The dissertation committee must be finalized at least one month before the dissertation proposal defense.

A dissertation committee includes the PhD advisor as the chair of the committee and a minimum of four members. Of the four members, at least two must be Mechanical Engineering graduate faculty members and one must be outside the department or UTSA, whose suitability will be subject to approval of the Graduate School. Part-time faculty may serve as members of the dissertation committee, but may not serve as PhD advisors.
IX. PhD Dissertation Proposal and Admission to PhD Candidacy

The student must have passed all parts of the written qualifying exam before defending their dissertation proposal. The student should first consider research topics for his/her dissertation, and then write a dissertation proposal based on preliminary results. Normally, the dissertation proposal is presented to the dissertation committee of the student within one year after passing the written qualifying examination. During this time, students can take ME 7951-3 Doctoral Research (Table 1, Section E). The dissertation proposal consists of quantifiable and verifiable objectives, literature survey, methodology, preliminary work, deliverables, and expected contribution.

A written dissertation proposal should be submitted to the student's dissertation committee at least two weeks before the oral presentation. The dissertation proposal should:

- Explain the basic idea of the dissertation topic
- Describe why that topic is original, challenging, and important
- Present an overview of the related work in the field
- State what kind of results are expected, and present preliminary results, if any
- Make a plausible argument that the study can be completed within a proposed time line.

The student should write the dissertation proposal as soon as he/she can address the issues described above. The dissertation proposal should be typically single spaced and 25-30 pages long. A public presentation of the student's dissertation proposal will be arranged and followed by a closed-door questioning by the dissertation committee.

The oral presentation is typically a 40-minute talk, followed by a question-and-answer session. Following the public presentation, the dissertation committee will conduct a closed-door oral examination based on the proposal and on relevant background from the student's Program of Study. Only the dissertation committee members may attend the closed-door session. After the examination, the student will be asked to leave, and the dissertation committee will discuss the student's performance in the dissertation proposal presentation. The dissertation committee may recommend changes before approving the dissertation proposal. No more than two attempts are permitted for the student to get his/her dissertation proposal approved and be admitted as a PhD candidate.

X. Final Oral Dissertation Defense

After the approval of the dissertation proposal and admission as a PhD candidate, the next steps are writing the dissertation and passing the final oral defense. During this time, students should register for ME 7981-3 Doctoral Dissertation (Table 1, Section E). The final oral defense is administered and evaluated by the student’s PhD dissertation committee and covers the general field of the dissertation. The final oral defense consists of a public presentation of the dissertation, followed by a closed session with the members of the dissertation committee. It is expected that the material of the dissertation will be of archival quality and will be published in journals. The dissertation must be approved by a unanimous decision of the Dissertation Committee.
XI. Registration

Students who attend classes at UTSA must be officially registered or approved to audit a course. UTSA does not guarantee the availability of particular courses or sections, and admission to classes is permitted only until the maximum number of students allowable in any section has been reached. UTSA reserves the right to cancel any course or section in which the number of registrants does not warrant its continuation.

If a student encounters a restriction when registering for a course, please contact the Program Coordinator in order to investigate the discrepancy. Students intending to register for **ME 7951-3: Doctoral Research** and **ME 7981-3: Doctoral Dissertation** must send an email to their faculty advisor requesting permission to be registered in the respective course. Once approval is received, please forward the email to the Program Coordinator and you will be notified when registration has been completed.

- **English Language Assessment Procedure:**
  - The English Language Assessment Procedure (ELAP) is a mandatory UTSA assessment for incoming international student’s whose Test of English as a Foreign Language (TOEFL) scores are between 500 and 600 (paper version) or 61 and 100 (Internet version). ELAP tests academic language skills in the areas of reading, writing, listening, and speaking. The test is administered during orientation week at no charge to the student. A registration hold is placed on students until the test is successfully completed.
  - Students who are required to take English for International Students (EIS) classes and do not register for them or drop them before they are successfully completed will be withdrawn from the University and will jeopardize their visa status. Once students successfully complete the EIS classes, the registration hold is removed from their record.

- **Auditing Courses:**
  - UTSA students and nonstudents who wish to audit a course may do so with the approval of the instructor and the chair of the department in which the course is offered, provided there is space in the classroom after all registered students have been accommodated. The minimum enrollment in a course must be reached without auditors.
  - All auditors must submit a signed Audit Course Form to the Enrollment Services Center, no sooner than the first day of class. A UTSA student pays an auditing fee of $25 per course. Auditors who are not registered UTSA students must pay an auditing fee of $50 per course. Persons over 65 years of age are permitted to audit without paying an auditing fee.

- **Cancellation of Enrollment:**
  - Students who fail to fulfill admission, registration, or financial requirements, or who otherwise fail to adhere to academic regulations may have their enrollment for the semester cancelled. Students may apply for readmission for a subsequent semester provided they have resolved the cause of cancellation.

- **Dropping Courses:**
  - Students may drop courses from their schedules for a limited time each semester. The online registration calendar for each semester indicates the
deadlines for students to drop courses each term.

- Courses officially dropped before the Census Date do not appear on a student’s transcript. See the online registration calendar each semester for Census Dates.
- Students who drop courses between the Census Date and the Automatic “W” Date have a record of the courses on their transcripts with an automatic grade of “W.” See the online registration calendar for the Automatic “W” Date. The change becomes official after it is processed by the Office of the Registrar.
- The Automatic “W” Date for graduate students is the end of the ninth week of classes for Fall and Spring semesters, the end of the third week of classes for a five-week Summer term, and the end of the sixth week of classes for a ten-week Summer term.
- It is the student’s responsibility to drop a course by the appropriate deadline. If a student fails to drop a course, even if the student does not attend the course, he or she will receive a grade of “F” in the class.
- Faculty and staff will not drop a student from a course automatically for nonattendance; the student must initiate the process and complete any necessary steps to ensure that the class is dropped.
- Under certain circumstances, students may be dropped from courses administratively by college deans. Students who do not meet course prerequisites or who fail to attend a course prior to Census Date may be dropped from courses. If a dean determines that a student should be dropped from a course for these or other documented circumstances, the student will be notified by the college overseeing the course. Students cannot assume that they will be automatically dropped from any class for failure to attend or failure to pay tuition and fees. Students are still responsible for dropping courses by the official deadline or they will receive a grade of “F” in the class. Students are responsible for checking their schedules on ASAP and for checking their official UTSA e-mail accounts to determine if they have been dropped from a class.
- After the Automatic “W” Date, a student may not drop a course except with the approval of the Dean of the college in which the course is offered and then only for urgent and substantiated, nonacademic reasons.

**XII. Student Travel Support**

Travel financial support may be available by either a faculty member and/or the Department of Mechanical Engineering. The Department of Mechanical Engineering is committed to providing students with the opportunity to attend and participate in conferences, research opportunities, and training workshops, contingent on the availability of funds.

In order to submit a request for travel support, please visit the Mechanical Engineering website > ME Login > Online Request Tracking > Enter your UTSA email address > Type your login credentials > Select: Students > Complete the four (4) Required Forms at the bottom of the page. Once the four forms are completed, please print and submit to the Department of Mechanical Engineering. The Department of Mechanical Engineering will inform you of the funding amount you were approved for. After the conference, please submit **ALL** receipts you wish to be reimbursed for to the Department of Mechanical Engineering.
**IMPORTANT LINKS:**
ME Department: [http://engineering.utsa.edu/mechanical/](http://engineering.utsa.edu/mechanical/)
ME Faculty: [http://engineering.utsa.edu/mechanical/faculty-staff/](http://engineering.utsa.edu/mechanical/faculty-staff/)
Graduate School: [http://graduateschool.utsa.edu/](http://graduateschool.utsa.edu/)
Graduate Catalog: [http://catalog.utsa.edu/graduate/](http://catalog.utsa.edu/graduate/)

Attachments: Map from UTSA to SwRI

Map of SwRI
ME 6113 is taught in Building 77 (No. 18 on the map)