Program Change Request

Date Submitted: 03/26/18 4:17 pm

Viewing: MS-MEEN : Master of Science in Mechanical Engineering

Last approved: 04/10/17 10:46 am

Last edit: 04/12/18 5:38 am

Changes proposed by: rebeccasimon

Catalog Pages Using this Program

Master of Science in Mechanical Engineering

Contact(s)

<table>
<thead>
<tr>
<th>Name</th>
<th>E-mail</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rebecca Simon</td>
<td><a href="mailto:rebeccasimon@tamu.edu">rebeccasimon@tamu.edu</a></td>
<td>979-458-9196</td>
</tr>
<tr>
<td>Angela Allensworth</td>
<td><a href="mailto:aallensworth@tamu.edu">aallensworth@tamu.edu</a></td>
<td></td>
</tr>
</tbody>
</table>

Academic level: Graduate
Effective Term: 2019-2020
Department: Mechanical Engineering
College: Engineering
Program type: Degree
Degree designation: MS - Master of Science
With a major in: Mechanical Engineering(MEEN)

Catalog Program Title
Master of Science in Mechanical Engineering

CIP and Fund code: 14190100

Rationale for Proposal
see attached memo

Program hours: 30
Is this program eligible for financial aid?: Yes

Will program hours change (increase/decrease) due to the proposed curriculum changes?: No

Program delivery mode: On-campus

Catalog Program Requirements

Program Requirements

Student's Advisory Committee
Degree Plan
Credit Requirements
Transfer of Credit
Limitations on the Use of Transfer, Extension and Certain Other Courses
Thesis Option
Thesis Proposal
Final Examination/Thesis Defense

History

1. Aug 11, 2016 by clmig-jwehrheim
2. Apr 6, 2017 by Angela Allensworth (arankin)
3. Apr 10, 2017 by Angela Allensworth (arankin)

Approval Path

1. 04/03/18 9:53 am
   Dan McAdams (dmcadams): Approved for MEEN Department Head
2. 04/03/18 4:07 pm
   Sandra Williams (sandra-williams): Approved for Curricular Services Review
3. 04/09/18 3:47 pm
   Jennifer Veracruz (jveracruz): Approved for EN Committee Preparer GR
4. 04/09/18 6:19 pm
   Harry Hogan (h-hogan): Approved for EN Committee Chair GR
5. 04/09/18 6:21 pm
   Harry Hogan (h-hogan): Approved for EN College Dean GR
6. 04/12/18 5:39 am
   Deena McConnell (djmc): Approved for Provost
7. 04/12/18 9:00 am
   LaRhesa Johnson (lrjohnson): Approved for GC Preparer
8. 05/03/18 3:10 pm
   LaRhesa Johnson (lrjohnson): Approved for GC Chair
Non-Thesis Option

Student’s Advisory Committee

The Master of Science in Mechanical Engineering has a non-thesis track. After applying for coursework, the student will consult with the head of his or her major or administrative department (or intercollegiate faculty, if applicable) concerning appointment of the chair of his or her advisory committee. The student’s advisory committee must be formed as soon as possible after admission to graduate studies, selecting the non-thesis track, graduate studies, and enrolling for coursework. The chair will be assigned a committee chair, consult with the student’s fields of study and research. The chair or the co-chair of the advisory committee must be from the student’s major department (or intercollegiate faculty, if applicable), and at least one or more of the members must have an appointment to a department other than the student’s major department. The committee members’ approval on the degree plan indicate their willingness to accept the responsibility for guiding and directing the entire academic program of the student. The outside member for students in an interdisciplinary program must be a faculty member who is an approved leave of absence or has voluntarily separated from the university.

Duties of the Committee

The duties of the committee include responsibility for the proposed degree plan, the research proposal, the thesis and the final examination. In addition, the committee as a group and as individual members are responsible for advising the student on academic matters, and, in the case of academic deficiency, initiating recommendations to the Office of Graduate and Professional Studies.

Degree Plan

The student’s advisory committee, in consultation with the student, will develop the proposed degree plan. The degree plan must be completed and filed with the Office of Graduate and Professional Studies prior to the deadline imposed by the student’s college or interdisciplinary degree program, if applicable, and no later than 90 days prior to the date of the final oral examination or thesis defense. A student submitting a proposed degree plan for a Master of Science degree should designate on the official degree plan the appropriate program option. A student who has earned 12 hours of graduate credit in residence at Texas A&M University may be authorized to transfer courses in excess of the limits prescribed below upon the advice of the advisory committee and with the approval of the Office of Graduate and Professional Studies. Courses taken in residence at an accredited U.S. institution or approved international institution with a final grade of B or greater may be considered for transfer credit if, at the time the courses were completed, the courses would be accepted for credit toward a similar degree for a student in degree-seeking status at the host institution. Otherwise, the limitations stated in the following section apply. Coursework in which no formal grades are given or in which grades other than letter grades (A or B) are earned (for example, CR, P, S, U, H, etc.) is not accepted for transfer credit. Courses appearing on the degree plan with grades of D, F or U may not be absolved by transfer work. Credit for thesis research or an equivalent is not transferable. Credit for coursework submitted for transfer from any college or university must be shown in semester credit hours or equated to semester credit hours. An official transcript from the university at which the transfer coursework was taken must be sent directly to the Office of Admissions.

Credit Requirement

A minimum of 30 semester credit hours of approved coursework is required for the thesis option Master of Science degree. A minimum of 36 semester credit hours of approved coursework is required for the Non-Thesis Option. Ordinarily the student will devote the major portion of his or her time to work in one or two closely related fields. Other work will be in supporting fields of interest. Transfer of Credit

A student who has earned 12 hours of graduate credit in residence at Texas A&M University may be authorized to transfer courses in excess of the limits prescribed below upon the advice of the advisory committee and with the approval of the Office of Graduate and Professional Studies. Courses taken in residence at an accredited U.S. institution or approved international institution with a final grade of B or greater may be considered for transfer credit if, at the time the courses were completed, the courses would be accepted for credit toward a similar degree for a student in degree-seeking status at the host institution. Otherwise, the limitations stated in the following section apply. Coursework in which no formal grades are given or in which grades other than letter grades (A or B) are earned (for example, CR, P, S, U, H, etc.) is not accepted for transfer credit. Courses appearing on the degree plan with grades of D, F or U may not be absolved by transfer work. Credit for thesis research or an equivalent is not transferable. Credit for coursework submitted for transfer from any college or university must be shown in semester credit hours or equated to semester credit hours. An official transcript from the university at which the transfer coursework was taken must be sent directly to the Office of Admissions.

Courses used toward a degree at another institution may not be applied for graduate credit. If the course to be transferred was taken prior to the conferral of a degree at the transfer institution, a letter from the registrar at that institution stating that the course was not applied for credit toward the degree must be submitted to the Office of Graduate and Professional Studies. Exemption is approved by the Office of Graduate and Professional Studies.
Limitations on the Use of Transfer, Extension and Certain Other Courses

Some departments may have more restrictive requirements for transfer work. If otherwise acceptable, certain courses may be used toward meeting credit-hour requirements for the master’s degree under the following limitations.

The maximum number of credit hours which may be considered for transfer credit is the greater of 12 hours or one-third (1/3) of the total hours of a degree plan. The following restrictions apply:

- Graduate and/or upper-level undergraduate courses taken in residence at an accredited U.S. institution, or approved international institution with a final grade of B or greater will be considered for transfer credit if, at the time the courses were completed, the student was in degree-seeking status at Texas A&M University, or the student was in degree-seeking status at the institution at which the courses were taken; and if the courses would be accepted for credit toward a similar degree for a student in degree-seeking status at the host institution.

- Courses previously used for another degree are not acceptable for degree plan credit.

- The maximum number of credit hours taken in post-baccalaureate non-degree (GG) classification at Texas A&M University which may be considered for application to the degree plan is 12.

A zero credit 684 and 685 course is only allowed for non-thesis master's students. Other courses, including 691 research hours, are not eligible for zero credit.

Not more than 12 hours may be used in any combination of the following categories:

- Not more than 8 hours in the combination of 691 (research), 684 (Professional Internship) or may be used.
- Not more than 8 hours of 685 (Directed Studies) may be used.
- Not more than 3 hours of 690 (Theory of Research) may be used.
- Not more than 3 hours of 695 (Frontiers in Research) may be used.
- A maximum of 2 hours of Seminar (681).
- A maximum of 9 hours of advanced undergraduate courses (300- or 400-level).

- For graduate courses of three weeks' duration or less, taken at other institutions, up to 1 hour of credit may be obtained for each five-day week of coursework. Each week of coursework must include at least 15 contact hours.
- Continuing education courses may not be used for graduate credit.
- Extension courses are not acceptable for credit.

Exceptions will be permitted only in unusual cases and when petitioned by the student’s advisory committee and approved by the Office of Graduate and Professional Studies.

Thesis Option

An acceptable thesis is required for the Master of Science degree for a student who selects the thesis option program. The finished work must reflect a comprehensive understanding of the pertinent literature and express in clear English, the problem(s) for study, the method, significance and results of the student’s original research. Guidelines for the preparation of the thesis are available in the Thesis Manual, which is available online at the Office of Graduate and Professional Studies website.

After successful defense (or exemption) and approval by the student’s advisory committee and the head of the student’s major department (or chair of the intercollegiate faculty, if applicable), the student must submit his/her thesis in electronic format as a single PDF file. The PDF file must be uploaded to the Office of Graduate and Professional Studies website. Additionally, a signed approval form must be brought or mailed to the Office of Graduate and Professional Studies. The PDF file and the signed approval form are required by the deadline.

Deadline dates for submitting the thesis are announced each semester or summer term in the "Office of Graduate and Professional Studies Calendar" (see Time Limit statement). These dates also can be accessed via the Office of Graduate and Professional Studies website.

Each student who submits a document for review is assessed a one-time thesis/dissertation processing fee through Student Business Services. This processing fee is for the thesis/dissertation services provided. After commencement, theses and dissertations are digitally stored and made available through the Texas A&M Libraries.

A thesis that is deemed unacceptable by the Office of Graduate and Professional Studies because of excessive corrections will be returned to the student's department head (or chair of the intercollegiate faculty, if applicable). The manuscript must be resubmitted as a new document, and the entire review process must begin again. All original submittal deadlines must be met during the resubmittal process to graduate that semester.

Thesis Proposal

For the thesis option Master of Science degree, the student must prepare a thesis proposal for approval by the advisory committee and the head of the major department or chair of the interdisciplinary faculty, if applicable. This proposal must be submitted to the Office of Graduate and Professional Studies at least 20 working days prior to the submission of the request for the final examination.

Compliance issues must be addressed if a graduate student is performing research involving human subjects, animals, infectious biohazards and recombinant DNA. A student involved in these types of research should check with the Office of Research Compliance and Biosafety (at (979) 458.1467) to address questions about all research compliance responsibilities. Additional information can also be obtained on the Office of Research Compliance and Biosafety website.

Thesis Defense/Final Examination

A student must pass a final examination by dates announced each semester or summer term in the Office of Graduate and Professional Studies Calendar. To be eligible to take the final examination, a student’s GPR must be at least 3.000 for courses on the degree plan and for all courses completed at Texas A&M which are eligible to be applied to a graduate degree, and there must be no unsolved grades of D, F or U for any course listed on the degree plan. To absolve a deficient grade, the student must repeat the course at Texas A&M University and achieve a grade of C or better. All coursework on the degree plan must have been completed with the exception of those hours for which the student is registered. For thesis-option students, an approved thesis proposal must be on file in the Office of Graduate and Professional Studies according to published deadlines prior to the final examination or submission of the request for exemption from the final examination.

A request to hold and announce the final examination must be submitted to the Office of Graduate and Professional Studies a minimum of 10 working days in advance of the scheduled date for the examination. The Office of Graduate and Professional Studies must be notified in writing of any cancellations. A student may be given only one opportunity to repeat the final examination for the master’s degree and that must be within a time period that does not extend beyond the end of the next regular semester (summer terms are excluded).

For thesis option students, the final examination covers the thesis and all work taken on the degree plan and at the option of the committee may be written or oral or both. The final examination may not be administered before the thesis is available to all members of the student’s advisory committee in substantially final form, and all members have had adequate time to review the document. The examination is conducted by the student’s advisory committee as finally constituted. A thesis option student must be registered in the University in the semester or summer term in which the final examination is taken. Persons other than members of the graduate faculty may, with mutual consent of the candidate and the major professor, attend final examinations for advanced degrees. Upon completion of the questioning of the candidate, all visitors must excuse themselves from the proceedings. A positive vote by all members of the graduate committee with at most one dissension is required.
to pass a student on his or her exam. A department, or interdisciplinary degree program, may have a stricter requirement provided there is consistency within all degree programs within a department or interdisciplinary degree program.

The Report of the Final Examination Form must be submitted with original signatures of only the committee members approved by the Office of Graduate and Professional Studies. If an approved committee member substitution (1 only) has been made, his/her signature must also be submitted to the Office of Graduate and Professional Studies. If necessary, multiple copies of the form may be submitted with different committee member original signatures. If an approved committee member substitution (1 only) has been made, his/her signature must be included on the form submitted to the Office of Graduate and Professional Studies.

A thesis option candidate may petition to be exempt from his/her final examination provided his/her degree plan GPR is 3.500 and greater and he/she has the approval of the advisory committee, the head of the student’s major department, or intercollege chair, if appropriate, and the Office of Graduate and Professional Studies. It is required that the petition for exemption be submitted the same semester the student intends to submit the thesis.

Non-Thesis Option

The Final Examination is not required for the non-thesis option Master of Science in Mechanical Engineering. Students, a final comprehensive examination may be required. The final exam cannot be held prior to the mid point of the semester if questions on the exam are based on courses in which the student is currently enrolled. If a student has completed all required degree plan coursework, the student is not required to be registered for classes in the semester the final examination is administered (unless he/she holds an assistantship). For specific final examination requirements, a student should check the program requirements for the degree which he/she is pursuing. Exam results must be submitted with original signatures of only the committee members approved by the Office of Graduate and Professional Studies. If an approved committee member substitution (1 only) has been made, his/her signature must also be submitted to the Office of Graduate and Professional Studies.

A student pursuing the non-thesis option is not allowed to enroll in 681 (research) for any reason and 691 may not be used for credit toward a non-thesis option Master of Science degree. A maximum of 4 credit hours of 684 (Professional Internship), 8 credit hours of 685 (Directed Studies), and up to 3 credit hours of 690 (Theory of Research) or 695 (Frontiers in Research) may be used toward the non-thesis option Master of Science degree. In addition, any combination of 684, 685, 690 and 695 may not exceed 25 percent of the total credit hour requirement shown on the individual degree plan. All requirements for the non-thesis option Master of Science degree other than those specified above are the same as for the thesis option degree.

Additional Requirements

Residence

Continuous Registration

Time Limit

Foreign Languages

Application for Degree

For information on applying for your degree, please visit the Graduation section.
| Required Proposal Forms | Signed_30-credits-MS-request-FINAL.pdf  
<table>
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<tr>
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<td>Mechanical Engineering_THECB-Change Semester Credit Hours 4-9-18.docx</td>
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<th>Reviewer Comments</th>
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<tbody>
<tr>
<td>Dan McAdams (dmcadams) (11/10/17 10:43 am): Rollback: the department will make the catalog changes</td>
</tr>
<tr>
<td>Sandra Williams (sandra-williams) (02/06/18 11:42 am): OGAPS: please review to make sure catalog program requirements/additional requirements meet your standard language requirements for graduate programs.</td>
</tr>
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<td>Tandilyn Morrel (tmorrel) (02/08/18 2:27 pm): Rollback: Edit credit requirement to 1 sentence: <em>A minimum of 30 semester credit hours is required for the Master of Science degree.</em></td>
</tr>
<tr>
<td>Deena McConnell (djm) (04/12/18 5:38 am): Updated THECB form approved by Engineering and substituted in CARS.</td>
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Texas Higher Education Coordinating Board  
Request to Change Semester Credit Hours

Directions: An institution shall use this form to request a change in the number of semester credit hours (SCH) required for a degree program already on the institution’s program inventory in accordance with Coordinating Board Rules, Chapter 5, Subchapter C, Section 5.55 – Revisions to Approved Programs.

Options:

1) Revisions that reduce the number of SCH require notification of change and affirmation that the reduction does not fall below the minimum requirements of the Southern Association of Colleges and Schools Commission on Colleges, program accreditors, and licensing bodies, if applicable.

2) Revisions that increase the number of SCH require detailed written documentation describing the compelling academic reason for the increase in the number of required hours.

NOTE: No request or notification is needed if revisions to the degree program curriculum do not result in a change in SCH.

Options 1 and 2 require the signature of the Provost or Chief Academic Officer.

Please submit Request to Change Semester Credit Hour via the Online Submission Portal: https://www1.thecb.state.tx.us/apps/proposals/

Information: Contact the Division of Academic Quality and Workforce at 512/427-6200.

Administrative Information

1. Institution: Texas A&M University

2. Program Name – As it appears on the Coordinating Board’s program inventory (e.g., Bachelor of Business Administration degree with a major in Accounting):

   Master of Science in Mechanical Engineering

3. Program CIP Code:

   14.1901.00

4. Contact Person: Provide contact information for the person who can answer specific questions about the program.

   Name: Prasad Enjeti  
   Title: Associate Dean for Academic Affairs  
   E-mail: enjeti@tamu.edu  
   Phone: 979-845-7200
**Notification/Request for Change in Semester Credit Hours (SCH):**

Current SCH: 32

Proposed SCH: 30

Implementation Date: August 1, 2019

*Complete Option 1 or 2 as appropriate*

**Option 1: Reduction in Semester Credit Hours**

*Is the change in the number of SCH compatible with the requirements of accreditation for the program?*

a. Southern Association of Colleges and Schools Commission on Colleges
   ☒ YES ☐ NO

b. Program Accréditator(s)
   □ YES □ NO ☒ NA
   Name of Program Accréditator: ______________________

c. Licensing Body(ies)
   □ YES □ NO ☒ NA
   Name of Licensing Body(ies): ______________________

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**Option 2: Increase in Semester Credit Hours**

Provide detailed documentation, such as changes in accrediting agency or licensing body requirements, workforce needs, or academic professional standards and needs, describing a compelling reason for the change in the number of SCH:

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**Signature of Compliance**

I hereby certify that all of the above changes have been approved in accordance with the procedures outlined in Coordinating Board Rules, Chapter 5, Subchapter C, Section 5.55.

Provost/Chief Academic Officer Date
October 19, 2017

MEMORANDUM

TO: Carol A. Fierke
   Provost and Executive Vice President

THROUGH: Mark Zoran
   Acting Associate Provost, Office of Graduate and Professional Studies

FROM: M. Katherine Banks
   Vice Chancellor and Dean of Engineering

SUBJECT: College of Engineering request to reduce the minimum student credit hours (SCH) for Master of Science (MS) degree from 32 SCH to 30 SCH

The College of Engineering is committed to providing the highest quality graduate programs. As we strive to do so, it is vitally important that we remain competitive with peer institutions to recruit outstanding graduate students interested in pursuing on campus and online master’s degrees in Texas A&M University’s College of Engineering. Several of our peer institutions (e.g., The University of Texas at Austin and Georgia Institute of Technology) have established 30-credit hour Master of Science degrees with a non-thesis and with a thesis option in engineering. These programs are very attractive to prospective students. Having a 30-credit hour Master of Science degree program in engineering will allow us to compete effectively, nationally and internationally, for the best students and will help to increase the number of students pursuing online Master of Science degrees.

The College of Engineering currently offers Master of Science degrees with a minimum of 32 credit hours; we would like to reduce the minimum for our Master of Science programs to 30 credit hours. Importantly, the reduction would only set the minimum and departments, wishing to do so, will be permitted to require more credit hours as required by their respective graduate program committees. All departments in the College of Engineering including Biological and Agricultural Engineering support the minimum credit hour reduction of the Master of Science degree from 32 to 30.

The College of Engineering along with the College of Agriculture & Life Sciences respectfully requests to reduce the minimum student credit hours (SCH) for the Master of Science degree from 32 SCH to 30 SCH.

Supporting attachment: A brief review of MS programs degree requirements of peer institutions and SACS requirement.
DEGREE REQUIREMENTS

Master of Science in Engineering

Students seeking the master's degree have three options, each requiring a total of thirty semester hours of credit. The thesis option requires twenty-four semester hours of coursework plus six hours in the thesis course. The report option requires twenty-seven hours of coursework plus three hours in the report course. The option without a thesis or report requires thirty semester hours of coursework. Students receiving financial aid through the sponsorship of the department are expected to choose the thesis option. The report option and the option without a thesis or report each can be completed in one year.

Regardless of the option chosen, a student is required to take six hours of supporting coursework outside of their technical area. Only courses completed on the letter-grade basis may be counted toward the degree. Only three hours of business-related courses may be counted. Students may count no more than six hours of upper-division undergraduate coursework toward the degree.

Doctor of Philosophy

The PhD program consists of coursework, qualifying examinations, and the dissertation. Students who have master's degrees must complete at least twenty-four hours of coursework; those who enter the graduate program with bachelor's degrees must complete at least forty-eight hours of coursework.

To be admitted to candidacy for the Doctor of Philosophy degree, the student must pass both a written and an oral examination. The written examination is general in nature and covers subject matter studied through the first year of graduate work. The oral examination is in the student's specialty area and is conducted by a committee of faculty members whose interests are in that area. Students may not take courses on the credit/no credit basis until they have passed the written qualifying examination.

Pages in this Section

- Degree Requirements
- Graduate Courses

On this page

- Master of Science in Engineering
- Doctor of Philosophy
**Master of Science in Mechanical Engineering**

The Master of Science degree in Mechanical Engineering (M.S.M.E.) has the following 30 minimum course credit-hour requirements. Only 6 credits at the 4000 level are permitted, the remaining credits must be 6000 level or above. It is a very flexible program which includes a thesis and non-thesis options.

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<th>With Thesis</th>
<th>Without Thesis</th>
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<tr>
<td>Coherent Major Area</td>
<td>12</td>
<td>21</td>
</tr>
<tr>
<td>Coherent Minor Area</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>(All course work in the Coherent Major and Minor Areas must be from the College of Computing, Science, and/or Engineering. The minor will not appear on transcripts or degree documentation.)</td>
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</tr>
<tr>
<td>Mathematics</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Thesis (ME 7000)</td>
<td>9</td>
<td>0</td>
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<tr>
<td><strong>Total for Degree</strong></td>
<td><strong>30</strong></td>
<td><strong>30</strong></td>
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Only courses from the School of Mathematics fulfill the mathematics requirement (3 credits).

The minimum coursework requirements must also conform to these criteria:

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<tr>
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<th>Without Thesis</th>
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<tbody>
<tr>
<td>ME xxxx Credits</td>
<td>9</td>
<td>18</td>
</tr>
<tr>
<td>Credits at 6000- Level or above</td>
<td>15</td>
<td>24</td>
</tr>
<tr>
<td>Special Problem Credit (ME 89xx)</td>
<td>0</td>
<td>0 or 3</td>
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ME xxxx credits do not include thesis credits (ME 7000).

The coherent minor area must be distinctly different from the major area. Note that ME 6753, ME 6789, and ME 6799 may only be used to satisfy the course work in the coherent minor area. COA 8685-Building Simulation Seminar, COA 8833-Computational Simulation of Build
Design, MGT 6165, and BC 6650 may be included in the coherent minor area. ME 6753 and BC 6650 may not be counted together in the coherent minor area.

The items listed below cannot be used to meet the course requirements for the M.S.M.E. degree:

- Any course in which you do not receive a grade of C or higher
- Any course taken for a nonletter grade (except thesis, transfer credit, or advanced standing)
- Any course required for the B.S.M.E. degree
- ME7785
- CETL course work
- Professional Master's Degree course work
Mechanical Engineering

https://www.engr.wisc.edu/department/mechanical-engineering/academics/phd-in-mechanical-engineering/frequently-asked-application-questions/

Master's Degree Questions

**WHAT GRADUATE DEGREES DOES THE MECHANICAL ENGINEERING DEPARTMENT OFFER?**

- Master of science in mechanical engineering
- Master of engineering in mechanical engineering in polymer engineering and science (Distance students only)
- Doctorate in mechanical engineering

**WHAT IS THE DIFFERENCE BETWEEN A MASTER OF SCIENCE AND A MASTER OF ENGINEERING?**

The master of engineering program in polymer engineering and science is more specialized and has a defined list from which to choose your courses. It is only offered through the distance program.

The master of science program is more flexible in the course selection, allowing you to focus on an area of your interest.

Both are 30 credit program options as of the fall 2014 semester.

**WHAT IS THE DIFFERENCE BETWEEN A THESIS OPTION MASTER'S DEGREE AND A COURSE OPTION MASTER'S DEGREE?**

The course option is exclusively coursework. There is no research or thesis for this option. There are, however, three credits of independent study required.

The thesis option requires you to enroll in research credits and to prepare a thesis. You will defend your thesis for a committee consisting of three faculty members at the conclusion of your program.

**APPROXIMATELY HOW LONG DOES IT TAKE TO EARN THE MASTER'S DEGREE OR DOCTORATE?**

Both master of engineering and master of science programs are 30 credit programs and will take approximately a year and a half to two years to complete.
Master of Science Degree Information

Master of Science in Mechanical Engineering (MSME)
Students who have completed a BSME from an ABET accredited school are eligible to receive the degree of Master of Science in Mechanical Engineering (M.S.M.E.).

Master of Science in Engineering (MSE)
Students who have completed a BS in an area of engineering other than ME are eligible to receive the Master of Science in Engineering (M.S.E.).

Master of Science (MS)
Students whose undergraduate degree is in disciplines other than engineering (such as math or physics) are eligible to receive the Master of Science (M.S.).

The above titles only vary due to the title of the undergraduate degree. The ME graduate program for a Master's degree remains the same regardless of the degree title.

Master's Degree Options (thesis or non-thesis)
Students who are admitted to the Master's program may choose to complete either the thesis option or the non-thesis option.

Thesis Option. The thesis option is highly recommended because it includes conducting independent research and a publishable report or thesis. Outstanding performance in the thesis option Master's provides students with a distinct advantage when applying for a Ph.D. program or employment. Admission to the Ph.D. requires that the student provide evidence of the ability to perform independent research.

- The thesis option requires a minimum of 21 graduate semester hours of course work and a thesis. Research credits acquired through the thesis research registration of ME 698 to fulfill the remainder of the requirement for a total of 30 credit hours. Research is always completed under the supervision of the Chair (Major
Professor) or Co-Chairs of the Advisory Committee. Only in special cases is this option available to distance education students.

- All Master's Plans of Study must contain a minimum of six (6) hours of applied mathematics; at least three (3) of which must be taken from the Mathematics Department.

**Non-thesis Option**

- The non-thesis option also requires 30 semester hours of graduate course work, not more than 6 credits of which may be completed as independent project work (ME 597 or ME 697). Independent project work may be completed under the supervision of the Chair of the Advisory Committee (Major Professor) or any other member of the faculty, including members of the Advisory Committee. The more predictable time frame for completion of course work available through the non-thesis option allows students to more accurately plan a graduation date. Students completing the Master's degree by distance education will, in general, be completing the non-thesis option.

- All Master's Plans of Study must contain a minimum of six (6) hours of applied mathematics; at least three (3) of which must be taken from the Mathematics Department.
The 30-hour program is intended for students that want to gain knowledge deeper than that provided at the bachelor's degree level and sufficient for designing and implementing state-of-the-art systems in industrial research and development positions. The program is also appropriate for students contemplating future doctoral study and desiring to gain experience in research. Graduates may work under the direction of doctoral scientists and engineers in high tech lab settings assisting in developing innovative products and systems that require strong foundational knowledge in the underlying sciences and the ability to synthesize and analyze engineering principles as they relate to the development of new computer engineering technology.

Required concentration area

This program will require that you select a concentration in Electrical Engineering or Computer Systems Engineering area at the time of application as it has a direct correlation to the curriculum you will follow.

Required core courses

Old core (Fall 2015 and earlier admits)

The combination of CEN 501 and CEN 502 serves to integrate the required knowledge of electrical engineering and computer science to ensure that all students have the necessary background to pursue advanced study in the areas of computer engineering. CEN 501 focuses on circuit and logic design, topics that span the electrical engineering to computer engineering interface. CEN 502 begins with computer architecture and focuses on operating systems, compilers and networking topics that cover the computer science to computer engineering interface. Together this pair of courses provides a common and necessary background for all students in the program to pursue graduate study in the six areas of the program. As such, these courses must be taken early in the student's course of graduate study.

- CEN 501 Computer Systems I: Circuits to Architectures
- CEN 502 Computer Systems II: Fundamentals of Algorithms and Optimization Techniques

Effective Spring 2016, CEN 501 and CEN 502 will no longer be offered. Starting Spring 2016, students will need to take the new core.

New core (Spring 2016 and later admits)

- CSE 551/591 Foundations of Algorithms
- EEE 554 Random Signal Theory
CEN-CS students are required to take the core course CSE 551 Foundations of Algorithms in their first semester and EEE 554 Random Signal Theory during the first academic year.
CEN-EE students are required to take the core course EEE 554 Random Signal Theory in their first semester and CSE 551 Foundations of Algorithms during the first academic year.

Computer Engineering Area Courses
The area courses in the graduate Computer Engineering program are partitioned into 5 CEN areas of study. These courses are referred to as the Computer Engineering Area Courses or CEN Area Courses. The following lists the 5 CEN areas:
1. Autonomous Systems & Robotics (ASR)
2. Communication and Networks (CN)
3. Distributed, Dependable and Secure Systems (DDSS)
4. Multimedia and Signal Processing (MSP)
5. VLSI, Architecture, & Embedded Systems (VAES)

Please refer to the table at the end of the CEN MS Handbook for a list of CEN Area courses.

General curriculum requirements: 30 hours

M.S. Thesis Track

6 credit hours of required core courses:
Admitted Fall 2015 and Earlier:
- CEN 501 Computer Systems I (3)
- CEN 502 Computer Systems II (3)
Admitted Spring 2016 and Later:
- CSE 551/591 Foundations of Algorithms
- EEE 554 Random Signal Theory

12 credit hours of graduate-level Computer Engineering Area Courses:
- 6 of the 12 credit hours should be graduate-level courses covering two (2) of the five (5) CEN areas (CEN areas listed above).
- CEN-CS Concentration: 9 credits graduate-level CSE or CEN and 3 credits graduate-level EEE or CEN. This requirement must be met by taking graduate-level CEN Area Courses.
- CEN-EE Concentration: 9 credits graduate-level EEE or CEN and 3 credits graduate-level CSE or CEN. This requirement must be met by taking graduate-level CEN Area Courses.
- No 4XX or cross-listed 4XX/591 courses allowed. All 12 credit hours should be graduate-level courses.

6 credit hours of electives:
- All graduate-level CSE, EEE, or CEN courses can be taken as electives.
- Up to 6 credit hours of CSE/EEE 4XX level coursework from the approved list (see list at the end of MS Handbook).
- Up to 6 credits of combined cross listed courses (5XX/4XX) from the approved list (see the list at the end of MS Handbook).
- Other Math, Science, and Engineering courses can count as electives with pre-approval.
- Up to 3 credit hours of Independent Study (Reading & Conference) Course: CEN 590

6 credit hours of thesis (written and a successful oral thesis defense): CEN 599

M.S. Non-Thesis Track

6 credit hours of required core courses:
Admitted Fall 2015 and Earlier:
- CEN 501 Computer Systems I (3)
- CEN 502 Computer Systems II (3)
Admitted Spring 2016 and Later:
- CSE 551/591 Foundations of Algorithms
- EEE 554 Random Signal Theory

12 credit hours of graduate-level Computer Engineering Area Courses:
- 6 of the 12 credit hours should be graduate-level courses covering two (2) of the five (5) CEN areas (CEN areas listed above).
- CEN-CS Concentration: 9 credits graduate-level CSE or CEN and 3 credits graduate-level EEE or CEN. This requirement must be met by taking graduate-level CEN Area Courses.
- CEN-EE Concentration: 9 credits graduate-level EEE or CEN and 3 credits graduate-level CSE or CEN. This requirement must be met by taking graduate-level CEN Area Courses.
- No 4XX or cross-listed 4XX/591 courses allowed. All 12 credit hours should be graduate-level courses.

12 credit hours of electives:
- All graduate-level CSE, EEE, or CEN courses can be taken as electives.
- Up to 6 credit hours of CSE/EE3 4XX level coursework from the approved list (see list at the end of MS Handbook).
- Up to 6 credits of combined cross listed courses (5XX/4XX) from the approved list (see the list at the end of MS Handbook).
- Other Math, Science, and Engineering courses can count as electives with pre-approval.
- Up to 3 credit hours of Independent Study (Reading & Conference) Course: CEN 590

Comprehensive Exam
Masters FAQs

Graduate admission FAQs

IMPORTANT: All applicants for advanced degrees must follow the Stanford Registrar’s university-wide instructions and requirements for completing an application. See http://studentaffairs.stanford.edu/gradadmissions. Departmental information on this page is SUPPLEMENTAL.

Where do I find information?

Go to Stanford’s Graduate Admissions site and explore all the information available on our departmental site (including the faculty pages and all of the pages under the links in “Prospective Graduate Students”). If these resources do not address any remaining questions, please send an email to the department at chemicalengineering@stanford.edu. Use your email subject line: Admissions - [family name] - [topic of your inquiry]

Academic and departmental matters

We have orientations and academic advising sessions for all new graduate students before you select your courses and start your first classes. Furthermore, there is ongoing support and advising from faculty and staff throughout your graduate career.

How long does it take to earn a MS degree?

The length of time is variable, depending on students’ undergraduate backgrounds and preparation, their goals and their self-chosen pace of graduate study. At least 45 units must be completed at Stanford. Most lecture courses in science and engineering are 3 units; some are 4 or 5 units. Some of the MS candidates complete their degree requirements in one academic year (in three quarters, with an average of 15 units/quarter), the most complete their master's work in four, five or six quarters (usually at the rate of 10 units/quarter).

What are the course requirements, and how long do they generally take to complete?

MS students can take between 8 and 18 units per quarter. The majority of lecture courses are 3 units; some are 4 or 5 units; seminar courses are 1-2 units. Most MS students take 42 units of lecture courses and 3 units of the required 1-unit departmental colloquium (seminar). Some students perform up to 6 units of research in lieu of a lecture course or two. MS students are required to take four core chemical engineering graduate courses. The rest of their MS lecture courses (usually 30 units) consist of graduate-level science and engineering elective lecture courses offered by Chemical Engineering and other related departments. These elective courses are proposed by the student, with the goal of creating a thematically cohesive master’s program that is customized within the degree requirements to the individual student’s educational goals.

Unit Converter Tool: https://grad.sfsu.edu/sites/default/files/assets/restrict/unit-converter.htm

45 quarter units = 30 semester credit hours
The Principles of Accreditation:

Foundations for Quality Enhancement

Southern Association of Colleges and Schools
Commission on Colleges
1866 Southern Lane
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2.7

2.7.1 The institution offers one or more degree programs based on at least 60 semester credit hours or the equivalent at the associate level; at least 120 semester credit hours or the equivalent at the baccalaureate level; or at least 30 semester credit hours or the equivalent at the post-baccalaureate, graduate, or professional level. If an institution uses a unit other than semester credit hours, it provides an explanation for the equivalency. The institution also provides a justification for all degrees that include fewer than the required number of semester credit hours or its equivalent unit. (Program length)

2.7.2 The institution offers degree programs that embody a coherent course of study that is compatible with its stated mission and is based upon fields of study appropriate to higher education. (Program content)

2.7.3 In each undergraduate degree program, the institution requires the successful completion of a general education component at the collegiate level that (1) is a substantial component of each undergraduate degree, (2) ensures breadth of knowledge, and (3) is based on a coherent rationale. For degree completion in associate programs, the component constitutes a minimum of 15 semester hours or the equivalent; for baccalaureate programs, a minimum of 30 semester hours or the equivalent. These credit hours are to be drawn from and include at least one course from each of the following areas: humanities/fine arts, social/behavioral sciences, and natural science/mathematics. The courses do not narrowly focus on those skills, techniques, and procedures specific to a particular occupation or profession. If an institution uses a unit other than semester credit hours, it provides an explanation for the equivalency. The institution also provides a justification if it allows for fewer than the required number of semester credit hours or its equivalent unit of general education courses. (General education)

2.7.4 The institution provides instruction for all course work required for at least one degree program at each level at which it awards degrees. If the institution does not provide instruction for all such course work and (1) makes arrangements for some instruction to be provided by other accredited institutions or entities through contracts or consortia or (2) uses some other alternative approach to meeting this requirement, the alternative approach must be approved by the Commission on Colleges. In both cases, the institution demonstrates that it controls all aspects of its educational program. (See Commission policy "Core Requirement 2.7.4: Documenting an Alternate Approach." ) (Course work for degrees)