

MASTER OF ENGINEERING IN BIOMEDICAL ENGINEERING

The Master of Engineering (MEng) program in biomedical engineering offers a flexible curriculum that equips students for success in industry by tailoring training toward the biomedical device product life cycle. Students in the program can further their engineering education for the medical device industry with the aim of:

- entering the medical device industry,
- changing their careers to the medical device industry, or
- enhancing their technical and management skills.

Through the program, students are enabled with the real-world skills needed to enter the medtech industry and solve critical engineering challenges/business interface challenges in health care. They collaborate with industry professionals and clinicians to identify unmet needs, engineer technologies that address these needs, and develop paths-to-market strategies for these technologies.

Most students admitted into this program have a bachelor's degree in engineering or an equivalent field. However, if the degree is not in engineering the flexible curriculum can accommodate non-engineering students with leveling courses.

The program includes a mandatory industry or technology translational immersion experience providing students the opportunity to receive specialized training through:

- industry internships/externships, or
- translational research with faculty focusing on product research and development, testing, manufacturing, and entrepreneurship), or
- clinical innovation with collaboration with clinical partners.

Our students graduate with real-world professional skills spanning the medical device and healthcare product life cycle, covering important topics such as problem/needs definition, requirements development, technology assessment/intellectual property review, design and engineering, advanced manufacturing, risk analysis, design verification and validation, quality engineering, regulatory and reimbursement strategies, clinical engineering, market analysis/assessment.

Program Requirements

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Student's Advisory Committee

After receiving admission to graduate studies and enrolling for coursework, the student will consult with the head of the department or the department head's designee (e.g., departmental graduate advisor) concerning appointment of the chair of his or her advisory committee. The student's advisory committee for the Master of Engineering will

consist of at least one member of the graduate faculty. Typically this member may be the departmental graduate advisor and will serve as the student's committee chair or, the departmental graduate advisor may appoint/approve another departmental faculty member to serve as the appropriate chair of the student's advisory committee. Depending on the departmental policy, additional committee members may be required. If additional committee members are deemed necessary by the department, the chair, in consultation with the student, will select the remainder of the advisory committee. The student will interview each prospective committee member to determine whether he or she is willing to serve. Only graduate faculty members located on Texas A&M University campuses may serve as chair of a student's advisory committee. Other graduate faculty members located off-campus may serve as a member or co-chair (but not chair), with a member as the chair. The chair of the committee, who usually has immediate supervision of the student's degree program, has the responsibility for calling meetings at any other time considered desirable.

If the chair of a student's advisory committee voluntarily leaves the University and the student is near completion of the degree and wants the chair to continue to serve in this role, the student is responsible for securing a current member of the University Graduate Faculty, from the student's academic program and located near the Texas A&M University campus site, to serve as the co-chair of the committee. The Department Head or Chair of Intercollegiate faculty may request in writing to the Associate Provost and Dean of the Graduate and Professional School that a faculty member who is on an approved leave of absence or has voluntarily separated from the university, be allowed to continue to serve in the role of chair of a student's advisory committee without a co-chair for up to one year. The students should be near completion of the degree. Extensions beyond the one year period can be granted with additional approval of the Dean.

If the chair of the student's advisory committee is unavailable for an extended time in any academic period during which the student is involved in activities relating to an internship or professional paper and is registered for courses such as 684, 692 or 693, the student may request, in writing, that the department head appoint an alternate advisory committee chair during the interim period.

The duties of the committee include responsibility for the proposed degree plan, any professional study or project, and the final examination. In addition, the committee, as a group and as individual members, is responsible for counseling the student on academic matters, and, in the case of academic deficiency, initiating recommendations to the Graduate and Professional School.

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 and for initiating all academic actions concerning the student. Although individual committee members may be replaced by petition for valid reasons, a committee cannot resign *en masse*.

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 Graduate and Professional School prior to the deadline imposed by the student's college, and no later than 90 days prior to the date of the final oral examination. No exceptions are allowed.

This proposed degree plan should be submitted through the online Document Processing Submission System located on the website <https://ogsdps.tamu.edu>.

Additional coursework may be added to the approved degree plan by petition if it is deemed necessary by the advisory committee to correct deficiencies in the student's academic preparation. No changes can be made to the degree plan once the student's Request for Final Examination or Request for Exemption from Final Examination is approved by the Graduate and Professional School.

Credit Requirement

A minimum of 30 semester credit hours of approved courses is required for the Master of Engineering degree.

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 above upon the advice of the advisory committee and with the approval of the Graduate and Professional School. Courses taken in residence at an accredited U.S. institution or approved international institution with a final grade of B or greater might 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 preceding 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 the 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 Graduate and Professional School.

Grades for courses completed at other institutions are not included in computing the GPA.

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.

1. 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 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.
2. The maximum number of credit hours taken in post-baccalaureate non-degree (G6) classification at Texas A&M University which may be considered for application to the degree plan is 12.
 3. A zero credit 684 or 685 course is only allowed for non-thesis option master's students. A zero credit 681 course can be used for either thesis or non-thesis option master's students. Other courses, including 691 (Research) hours, are not eligible for zero credit.
 4. 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:
 - A maximum of 6 hours of 684 (Professional Internship) and/or
 - A maximum of 6 hours of 685 (Directed Studies), and
 - Up to 3 hours of 690 (Theory of Research), and
 - Up to 3 hours of 695 (Frontiers in Research).
 5. A maximum of 2 hours of 681 (Seminar).
 6. A maximum of 9 hours of advanced undergraduate courses (300- or 400-level).
 7. 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.
 8. No credit hours of 691 (Research) may be used.
 9. Continuing education courses may not be used for graduate credit.
 10. Extension courses are not acceptable for credit.
 11. For non-distance degree programs, no more than 50 percent of the credit hours required for the program may be completed through distance education courses.
 12. To receive a graduate degree from Texas A&M University, students must earn one-third or more of the credits through the institution's own direct instruction. This limitation also applies to joint degree programs.

Exceptions will be permitted only in unusual cases and when petitioned by the student's advisory committee and approved by the Graduate and Professional School.

Final Examination

A final comprehensive examination is not required for the MEng Biomedical Engineering non-thesis option.

Additional Requirements

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Residence

No residence requirement exists; however, attention is directed to the rules regarding Limitations on the Use of Transfer, Extension and Certain Other Courses.

See Residence Requirements (<http://catalog.tamu.edu/graduate/academic-expectations-general-degree-requirements/#degree requirementstext>).

Time Limit

All degree requirements must be completed within a period of seven consecutive years for the degree to be granted. A course will be considered valid until seven years after the end of the semester in which it is taken. Graduate credit for coursework which is more than seven calendar years old at the time of the final examination (oral or written) may not be used to satisfy degree requirements.

Foreign Languages

No specific language requirement exists for the Master of Engineering degree.

Internship or Practicum

The final examination is not to be administered until all other requirements for the degree, including any internship, have been substantially completed.

Application for Degree

For information on applying for your degree, please visit the Graduation (<http://catalog.tamu.edu/graduate/academic-expectations-general-degree-requirements/#degree requirementstext>) section.