MASTER OF ENGINEERING IN ENGINEERING AND DOCTOR OF MEDICINE COMBINED DEGREE PROGRAM

Program Requirements

Master of Engineering in Engineering (p. 2)
Doctor of Medicine (p. 1)

Doctor of Medicine
The 4-year curriculum provides the basic science and clinical foundations that will prepare medical students for supervised medical practice in residency and beyond.

First Year
Fall

PRE-CLERKSHIP PHASE 1
MEID 605 Foundations of Medicine I 7
MEID 606 Foundations of Medicine II 5
MEID 607 Medical Gross Anatomy 8
MEID 619 Practice of Medicine I 7
Semester Credit Hours 27

Spring
MEID 608 Neuroscience 6
MEID 609 Introduction to Disease 9
MEID 616 Cardiovascular 5
MEID 617 Respiratory 3
MEID 618 Medical Student Grand Rounds 2
MEID 620 Practice of Medicine II 6
Semester Credit Hours 31

Second Year
Fall
MEID 701 Hematology/Oncology 4
MEID 704 Renal Genitourinary 3
MEID 706 Metabolism/Gastrointestinal/Nutrition 3
MEID 707 Endocrinology and Reproductive Sciences 3
MEID 708 Integument-Musculoskeletal 2
MEID 711 Evidence Based Medicine 1
MEID 712 Practice of Medicine III 4
Semester Credit Hours 20

Third Year
Fall
CLINICAL PHASE 2
Clerkship 2
EMED 800 Emergency Medicine Clerkship 4

IMED 800 Internal Medicine Clerkship 8
MEID 685 Directed Studies 8
MEID 821 Practice of Medicine IV 1
MEID 822 Practice of Medicine V 1
MEID 823 Practice of Medicine VI - Interprofessional Social and Ethical Dilemmas in Healthcare 1
MFCM 800 Family Medicine Clerkship 6
MPED 800 Pediatrics Clerkship 6
MPSY 800 Psychiatry Clerkship 6
MRAD 800 Radiology Clerkship 2
OBGY 800 Obstetrics and Gynecology Clerkship 6
SURG 800 Surgery Clerkship 8

Semester Credit Hours 57

Fourth Year
Fall
MEID 985 Special Topic 8
Acting Internship (4 weeks) 4
Select one of the following: 4
IMED 896 Internal Medicine Acting Internship
MEID 998 Acting Internship - Student Initiated Elective
MFCM 806 Family Medicine Acting Internship
MPED 829 Pediatric Acting Internship
OBGY 809 Obstetrics and Gynecology Acting Internship
SURG 816 Surgery Acting Internship
Critical Care Medicine (4 weeks) 4
Select one of the following: 4
IMED 831 Medical Intensive Care Unit
MEID 997 Critical Care - Student Initiated Elective
MPED 802 Neonatal Intensive Care Unit

Semester Credit Hours 16

Spring
Practice of Medicine (2 weeks)
MEID 850 Practice of Medicine Capstone 2
Electives 5 41

Semester Credit Hours 43

Total Semester Credit Hours 194

1 Pre-Clerkship Phase
The first 18 months of the curriculum (pre-clerkship portion) focus on the fundamentals of biomedical science and consist of two components, Foundations and Organ Systems administered in consecutive blocks.

Foundations blocks emphasize the basic structure of the human body and basic principles of other medical science disciplines, i.e., gross anatomy, histology, basic principles of biochemistry, genetics, pharmacology, and cell physiology. Students take integrated courses which cover medical humanities, ethics, leadership, important professional development topics, and introduction to Clinical Skills, which includes patient history-taking and doctor-patient communication skills and physical diagnosis.

By mid-April of the first year, students transition into the Organ Systems blocks. The Organ Systems blocks cover normal function, pathophysiology and disease-related aspects of the specific organ
systems including the basic therapeutic approach to disease. The disciplines covered in Organ Systems blocks include organ-based physiology, organ system/disease-related biochemistry and genetics, pathology, microbiology, immunology, pharmacology, introductory pediatrics and introductory internal medicine. During the Organ Systems blocks, students continue to build skills in integrated humanities and clinical skills.

2 **Clinical Phase**

During the Clinical portion of the curriculum, students rotate on clinical service in required clerkships and have opportunities for elective rotations in areas of interest. During this time, students have the opportunity to experience clinical training in several different patient care venues and locations, including private-practice, academic, and governmental institutions in Austin, Bryan-College Station, Corpus Christi, Dallas, Houston, Round Rock and Temple.

3 18 month curriculum: Courses may be taken beginning with the Spring of Year 2 through the end of Spring of Year 3.

4 Required rotations/courses. These courses are available all year.

5 Electives are offered on all COM campuses. Students may choose from predetermined electives, design custom learning experiences, or participate in offerings at other medical colleges on a limited basis.

• **Selective Courses:** Within the elective time provided to students, 15 credit hours must follow the specialty specific recommendations. The selective courses were created to help students maximize opportunities and focus training that is complementary to their career goals. Selectives are based on career specialty choice.

• **Elective Courses:** The Texas A&M College of Medicine electives have been developed to accommodate the diverse educational needs of our students. Students must obtain 24.5 credit hours of electives. The electives provide students the opportunity to further develop their medical knowledge, skills and attitudes. In addition to the electives that have been developed by the college, students may develop student-initiated electives. Student Initiated Electives (SIEs) allow students in good standing great latitude in designing unique elective experiences. All other electives rules/guidelines must also be followed.

• EnMed students may apply up to 12 credit hours of engineering courses as credit by exam.

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**Requirements for Graduation for MD Degree**

The Doctor of Medicine degree is awarded at the completion of the four-year program to those students who have attained at least a grade of P or S (or higher) in all courses and clerkships in the medical curriculum, who are not on probation, and who have satisfactorily demonstrated to the faculty the personal and professional qualities essential to the practice of medicine. Students are expected to complete requirements for the MD degree within six (6) years, not counting time away on leave of absence or pursuit of advanced degrees, such as an MD/PhD.

- A passing grade in all required courses and clerkships must be achieved in order to receive the Doctor of Medicine (MD) degree.
- The student must obtain at least 194 credit hours to qualify for graduation.
- Passage of USMLE Step 1 and Step 2-CK is required for graduation.
  - Student must pass USMLE Step 1 for promotion to the 4th year.

COM students who qualify for the MD degree and who attain a GPA of 3.50 or above in their professional medical curricula, are awarded a degree “With Honors.” Students who enter the curriculum with advanced standing are not eligible to be named honor graduates.

Commencement for COM students who have earned the MD degree takes place at the end of the spring semester.

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**Master of Engineering in Engineering**

The curriculum for the Master of Engineering in Engineering (MENG) degree within the EnMed collaborative program is a tailored program of study that meets all MENG program requirements utilizing didactic, blended, and experiential learning in concert with MD coursework. The plan of study is taken concurrently with the MD plan of study shown above.

There will be three types of instruction used for the engineering courses which include blended engineering, engineering didactic, and experiential engineering. Within the MENG program, there will be 10 credit hours of blended instruction where the engineering content will be taught concomitantly with medicine to develop knowledge or solve a challenge at the intersection of the two fields (with distinct courses and assessments). An additional 8 credit hours will be didactic courses where only engineering will be covered. Then in the last part of the program, the credit hours will be experiential learning and project focused. As mentioned before, the student may apply up to 12 credit hours of the experiential engineering coursework to the MD program as elective credit using a credit by exam process.

**Program Requirements**

- Student’s Advisory Committee (p. 2)
- Degree Plan (p. 3)
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- Transfer of Credit (p. 3)
- Limitations on the Use of Transfer, Extension and Certain Other Courses (p. 3)
- Final Examination (p. 4)

**Student’s Advisory Committee**

**On-Campus and Distance Education Degree Programs**

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.
On-Campus and Distance Education Degree Programs

Credit Requirement

An approved degree plan by the Graduate and Professional School.

Examination or Request for Exemption from Final Examination is

correct deficiencies in the student's academic preparation. No changes

additional coursework may be added to the approved degree plan

website

This proposed degree plan should be submitted through the

online Document Processing Submission System located on the

website https://ogsdpss.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.

Degree Plan

On-Campus and Distance Education Degree Programs

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://ogsdpss.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

On-Campus and Distance Education Degree Programs

A minimum of 30 semester credit hours of approved courses is required

for the Master of Engineering degree.

Transfer of Credit

On-Campus and Distance Education Degree Programs

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

On-Campus and Distance Education Degree Programs

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 and 685 course is only allowed for non-thesis

   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 Seminar (681).

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.

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
On-Campus and Distance Education Degree Programs

The candidate must pass a final examination by dates announced
each semester or summer term in the Graduate and Professional
School Calendar unless the student has been exempted from the
examination. The candidate is eligible to petition for an exemption from
the final examination with departmental or chair of intercollegiate faculty,
if applicable, and committee approval. The approved petition should
be submitted to the Graduate and Professional School by the deadline
announced for the student's final semester (or semester of graduation) in
the Graduate and Professional School Calendar. Please see the Graduate
and Professional School website at http://grad.tamu.edu/.

To be eligible to take the final examination, a student's GPA 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
no unabsolved grades of D, F or U can occur for any course listed on
the degree plan. To absorb 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.

A request to hold and announce the final examination must be submitted
to the Graduate and Professional School a minimum of 10 working days
in advance of the scheduled date for the examination. The Graduate and
Professional School must be notified in writing of any cancellation. 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). 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.

The final examination covers all work taken on the degree plan and
at the option of the committee may be written or oral or both. The
examination is conducted by the student's advisory committee as
finally constituted. Persons other than members of the graduate faculty
can, 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 can have a stricter requirement provided
there is consistency within all degree programs within a department.

The Report of the Final Examination Form must be submitted with
original signatures of only the committee members approved by the
Graduate and Professional School. If an approved committee member
substitution (1 only) has been made, his/her signature must also be
submitted to the Graduate and Professional School. 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 Graduate and Professional School.