

MATERIALS SCIENCE AND ENGINEERING, MS

Materials Science and Engineering (MSE) Masters Program

The Tulane University Master of Science Degree in Materials Science and Engineering is an interdisciplinary degree that focuses on developing the deep understanding of materials modeling, processing, structure, properties, and performance required to solve complex technological problems. The program covers both "hard" and "soft" materials along with related devices. The MSE masters program provides preparation for professional practice in modern materials science for those technologists who wish to continue their education. Participating faculty are drawn from multiple materials-oriented departments in the School of Science and Engineering, including Chemistry, Chemical and Biomolecular Engineering, Biomedical Engineering, and Physics and Engineering Physics. This rigorous program trains graduate students to become leaders in industrial, government, and university settings. The program is flexible, allowing both full-time and part-time students, along with thesis (research component) and non-thesis (coursework only) tracks. Graduates are expected to fill the growing global demand for trained materials scientists and engineers in the twenty-first century. Graduates typically find work in a number of fields, including biotechnology and health care, defense, information technologies, manufacturing, aerospace, chemical processing, and energy.

Requirements

Required and Elective Coursework

Applicants may choose one of two paths: 30 credits of coursework OR 24 credits of coursework and a 6-credit written research thesis supervised by MSE faculty at Tulane (<https://tulane.app.box.com/s/wny7qqlm75c0o18pukm1224byk963szq/>).

The required coursework for the Tulane MSE Master's degree consists of four courses.

Course ID	Title	Credits
MPEN 6360	Structure of Materials	3
MPEN 6350	Kinetics of Material Systems	3
MPEN 6760 or CENG 7110	Thermodynamics of Materials Modern Thermodynamics	3
One Properties of Materials Course from an approved list.		
PHYS 6700	Electrnc Prop of Materls	3
MPEN 6370	Processing of Biomaterials	3
MPEN 6560	Photonic Materials & Devices	3
PHYS/CENG 6210	Molec Biophysics & Polymer Phy	3
MPEN 6720	Mechanic Behavior of Materials	3

The remaining coursework (six courses for non-thesis students or four courses for students pursuing the thesis option) consists of graduate electives in science and engineering as approved by the program's Advisory Committee.

Partial List of Elective Courses in MSE.

Course ID	Title	Credits
MPEN 6290	Computation Material Sci & Eng	3
MPEN 6560	Photonic Materials & Devices	3
MPEN 6370	Processing of Biomaterials	3
MPEN 6380	Materials for Energy	3
MPEN 6620	MicroFab and Nanotech	3
MPEN 6720	Mechanic Behavior of Materials	3
BMEN 6260	Molec Princ Funct Biomatr	3
BMEN 6650	Biomechanics and Biotransport	3
BMEN 6340	Soft Tissue Mechanics	3
BMEN 6400	Biomaterials & Tissue Engineering	3
CENG 6130	Surf. & Colloid Phenomen	3
CENG 6210 or PHYS 6210	Molec Biophysics & Polymer Phy Molec Biophysics & Polymer Phy	3
CENG 6420	Survey Contemp Polymers Rsh	3
CENG 6780	Special Topics (Electrochemistry)	3
CENG 6781	Special Topics (Nanostructured Soft Materials)	3

CENG 6890	Polymer Engr & Science	3
CENG 7870	Special Topics (Advanced Material Design)	3
CHEM 7440	Adv Organic Polymer Chemistry	3
PHYS 6700	Electrnc Prop of Materls	3
PHYS 7130	Solid State Physics	3

Students interested in **technology entrepreneurship and commercialization** may take one of the following courses to fulfill one of their electives.

Course ID	Title	Credits
MGMT 6160	New Venture Planning	3
MGMT 7210	Management of Technology and Innovation	3
SCEN 6000	Entrepreneurship Eng & Biosci	3
BMEN 6080	Tech Invent & Commercialization	3

Other SSE courses, including ones designated as BMEN, CENG, CHEM, COSC, MATH, and PHYS, may be suitable electives for MSE Master's students, with approval from the Advisory Committee.

Admission

Applicants from all undergraduate science and engineering majors are eligible to apply. For more information, go to our admissions page here: <https://sse.tulane.edu/pep/academics/graduate/mse-masters-program> (<https://sse.tulane.edu/pep/academics/graduate/mse-masters-program/>).

Tuition

Non-4+1 students will pay the per-credit rate for Science and Engineering

For Tuition Rates » (<https://studentaccounts.tulane.edu/tuition-and-fees/>)

GPA Requirement

A GPA of 3.0 is required for the degree to be conferred. Courses receiving less than B- will contribute no credit toward the Master's degree requirements.

Apply

Please use the Online Application System (<https://applygrad.tulane.edu/apply/>) to apply for the program. The application deadlines are May 15th for Fall admission and November 15th for Spring admission.

Contacts

Please contact Prof. Doug Chrisey, or any member of the MSE Master's Program Advisory Committee, if you have questions about the program.

- Prof. Doug Chrisey (dchrisey@tulane.edu), Physics and Engineering Physics
- Prof. Matthew Escarra (escarra@tulane.edu), Physics and Engineering Physics
- Prof. Vijay John (vj@tulane.edu), Chemical and Biomolecular Engineering
- Prof. Michael Moore (mooremj@tulane.edu), Biomedical Engineering
- Prof. Noshir Pesika (npesika@tulane.edu), Chemical and Biomolecular Engineering
- Prof. Russell Schmehl (russ@tulane.edu), Chemistry

Materials Science and Engineering (MSE) Masters 4+1 Program

In addition to the above requirements:

- Tulane 4+1 students must have a minimum grade of B in CENG/ENGP 3120, and at least one of their letters of recommendation must be from a Tulane SSE faculty member.
- 4+1 students will normally indicate their intention to pursue the program before the end of the third year at Tulane and will complete between 6 and 12 credits of coursework towards the MS degree by the end of the fourth year.
- Six of these credits can count simultaneously towards the 120 credits required for the Bachelor's degree.
- GRE and TOEFL scores are not required for Tulane 4+1 students.

Tuition

Students in the Tulane 4+1 programs pay only 35% of the regular graduate tuition for the 5th year.

For Tuition Rates » (<https://studentaccounts.tulane.edu/tuition-and-fees/>)

GPA Requirement

A GPA of 3.0 is required at graduation. Courses receiving less than B- will contribute no credit toward the Master's 4+1 degree requirements.

Apply

Please use the Online Application System (<https://applygrad.tulane.edu/apply/>) to apply for the program. The application deadlines are May 15th for Fall admission and November 15th for Spring admission.

Contacts

Please contact Prof. Doug Chrisey, or any member of the MSE 4+1 Master's Program Advisory Committee, if you have questions about the program.

- Prof. Doug Chrisey (dchrisey@tulane.edu), Physics and Engineering Physics
- Prof. Matthew Escarra (escarra@tulane.edu), Physics and Engineering Physics
- Prof. Vijay John (vj@tulane.edu), Chemical and Biomolecular Engineering
- Prof. Michael Moore (mooremj@tulane.edu), Biomedical Engineering
- Prof. Noshir Pesika (npesika@tulane.edu), Chemical and Biomolecular Engineering
- Prof. Russell Schmehl (russ@tulane.edu), Chemistry