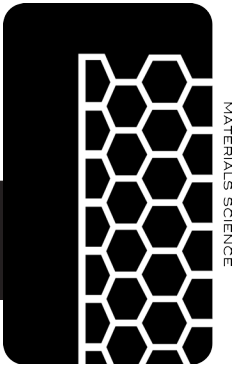


MSNE

Materials Science and
NanoEngineering

WEB LINKS	http://msne.rice.edu
FRANK ADVICE	Many MSNE students pursue graduate degrees in top graduate schools after earning their B.S. degree, so undergraduate research experiences are quite important. Research intern experiences also help students obtain industrial jobs after graduation.
ADVICE FOR STUDENTS WITH AP CREDIT	Students with AP credit for calculus would do well to move the MATH and CAAM sequence up. If the CAAM sequence can be fully completed in the sophomore year, this reduces the junior year pressure and also allows for more opportunities to participate in undergraduate research.
ALTERNATIVE CURRICULA	Not applicable.
BS VERSUS BA	Students are encouraged to pursue the B.S. degree instead of the B.A. degree, especially those who plan to pursue a graduate degree or practice engineering.
NOT REQUIRED BUT HIGHLY RECOMMENDED COURSES	See the undergraduate program page on our website, http://msne.rice.edu



RESEARCH	Many MSNE majors participate in undergraduate research; some even start during their freshman year. To get involved, speak to a MSNE undergraduate adviser or directly to a MSNE faculty member.
INTERNSHIPS	Summer research internships are often available through individual MSNE research labs, as well as universities abroad. Many students also pursue industrial or government lab internships as well. Notices are posted to the MSNE undergrad email list.
STUDY ABROAD	Study abroad is most feasible in the fall semester of the sophomore and junior years. This avoids potential conflicts with lab classes and the year-long senior design sequence.
PROFESSIONAL ORGANIZATIONS	<p>American Ceramic Society (ACerS) ceramics.org</p> <p>Association for Iron & Steel Technology (AIST) aist.org</p> <p>ASM International asminternational.org</p> <p>The Minerals, Metals, and Materials Society (TMS) tms.org</p> <p>Rice Undergraduate Materials Science and NanoEngineering Society materialsociety.blogs.rice.edu</p> <p>Rice Center for Engineering Leadership(RCEL) rcel.rice.edu</p>
INTERESTING COURSES FOR NON-MAJORS	<p>MSNE 201 Introduction to NanoEngineering</p> <p>MSNE 301 Materials Science</p> <p>MSNE 402 Mechanical Properties of Materials</p> <p>MSNE 406 Physical Properties of Solids</p> <p>MSNE 435 Crystallography and Diffraction</p>

B.A. In Materials Science and NanoEngineering

Specialization Areas: None Available. Students select specialization electives to suit their academic interests and career plans.

Sample Degree Plan

*THIS IS ONE EXAMPLE OF MANY POSSIBLE SCHEDULES.
CONSULT A DIVISIONAL OR DEPARTMENTAL ADVISER TO CUSTOMIZE YOUR DEGREE.*

FALL			SPRING		
FRESHMAN 18 credits			FRESHMAN 14 credits		
MATH 101	Single Variable Calculus I	3	MATH 102	Single Variable Calculus II	3
CHEM 121	General Chem I w/Lab or CHEM 151	4*	CHEM 122	General Chemistry II w/Lab	4*
PHYS 101•	Mechanics w/Lab or PHYS 111	4*	PHYS 102••	Electr & Magnetism w/Lab or PHYS 112	4*
MSNE 201	Introduction to NanoEngineering	3	DIST	Distribution elective	3
FWIS	Freshman Writing	3			
LPAP	Lifetime Phys Activity elective	1			
SOPHOMORE 15 credits			SOPHOMORE 15 credits		
MATH 211	Ord. Diff. Eqs. & Linear Algebra	3	MATH 212	Multivariable Calculus	3
MSNE 301	Materials Science	3	DIST	Distribution elective	3
DIST	Distribution elective	3	OPEN	Open elective	3
OPEN	Open elective	3	OPEN	Open elective	3
OPEN	Open elective	3	OPEN	Open elective	3
JUNIOR 15 credits			JUNIOR 14 credits		
MSNE 401	Thermodynamics in Materials Sci	3	MSNE 302	Materials Processing	3
MSNE 406	Physical Properties of Materials	3	MSNE 303	Materials Sci Junior Laboratory	1
DIST	Distribution elective	3	MSNE 311	Materials Selection and Design	4
OPEN	Open elective	3	DIST	Distribution elective	3
OPEN	Open elective	3	OPEN	Open elective	3
SENIOR 15 credits			SENIOR 15 credits		
MSNE 402	Mechanical Properties of Materials	3	MSNE 435	Crystallography & Diffraction	3
DIST	Distribution elective	3	OPEN	Open elective	3
MSNE 415	Ceramics and Glasses OR 411 OR 593 OR 594	3	OPEN	Open elective	3
OPEN	Open elective	3	OPEN	Open elective	3
OPEN	Open elective	3	OPEN	Open elective	3

* In addition to class hours, these courses have a regularly scheduled lab and/or discussion session that must fit into your schedule.

- When registering for PHYS 101, you must also register for PHYS 103, the discussion section for 101.
- When registering for PHYS 102, you must also register for PHYS 104, the discussion section for 102.

BASIC REQUIREMENTS	General math & science courses	28
	Core courses in major	29
ELECTIVE REQUIREMENTS	Open electives and LPAP	42
	FWIS and distribution courses	21
Minimum credit required for the B.A.		120

Of the 120 total degree credits, the B.A. in Materials Science and NanoEngineering requires 57 credits in general math and science courses and core courses.

Major Requirements

NUMBER	CREDIT	TITLE
MATH 101	3	Single Variable Calculus I
MATH 102	3	Single Variable Calculus II
MATH 211	3	Ordinary Differential Equations and Linear Algebra
MATH 212	3	Multivariable Calculus
PHYS 101-*/111	4*	Mechanics w/Lab
PHYS 102-*/112	4*	Electricity and Magnetism w/Lab
CHEM 121	4*	General Chemistry I w/Lab
CHEM 122	4*	General Chemistry II w/Lab
MSNE 201	3	Introduction to NanoEngineering
MSNE 301	3	Materials Science
MSNE 302	3	Materials Processing
MSNE 303	1	Materials Science Junior Lab
MSNE 311	4	Materials Selection and Design
MSNE 401	3	Thermodynamics in Materials Science
MSNE 402	3	Mechanical Properties of Material
MSNE 406	3	Physical Properties of Solids
MSNE 411/415/593/ 594 ●●●	3	Metallography and Phase Relations/Ceramics and Glasses/ Polymer Physics/Properties of Polymers
MSNE 435	3	Crystallography and Diffraction

* In addition to class hours, these courses have a regularly scheduled lab and/or discussion session that must fit into your schedule.

- When registering for PHYS 101, you must also register for PHYS 103, the discussion section for 101.
- When registering for PHYS 102, you must also register for PHYS 104, the discussion section for 102.
- Check the registrar's course schedules for availability of these four selected electives.