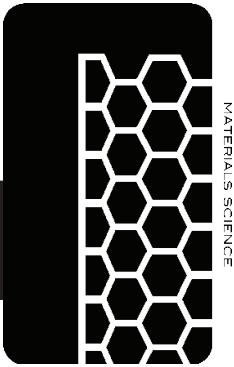


MSNE

Materials Science and
NanoEngineering

WEB LINKS	https://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.



<p>RESEARCH</p>	<p>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.</p>
<p>INTERSHIPS</p>	<p>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.</p>
<p>STUDY ABROAD AND INTERSHIPS</p>	<p>Study abroad and full-time off-campus internships need to be scheduled in the fall semester of the sophomore and junior years. This avoids conflicts with lab classes and the year-long senior design sequence.</p>
<p>PROFESSIONAL ORGANIZATIONS</p>	<p>American Ceramic Society (ACerS) ceramics.org Association for Iron & Steel Technology (AIST) aist.org ASM International asminternational.org The Minerals, Metals, and Materials Society (TMS) tms.org Rice Undergraduate Materials Science and NanoEngineering Society materialsociety.blogs.rice.edu Rice Center for Engineering Leadership(RCEL) rcel.rice.edu</p>
<p>INTERESTING COURSES FOR NON-MAJORS</p>	<p>MSNE 201 Introduction to NanoEngineering MSNE 301 Materials Science MSNE 402 Mechanical Properties of Materials MSNE 406 Physical Properties of Solids 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 or 105	Single Variable Calculus I 3	MATH 102 or 106	Single Variable Calculus II 3
CHEM 121 or CHEM 151	General Chem I w/Lab 4*	CHEM 122	General Chemistry II w/Lab 4*
PHYS 101*	Mechanics w/Lab or PHYS 111 4*	PHYS 102**	Electr & Magnetism w/Lab 4*
MSNE 201	Introduction to NanoEngineering 3	PHYS 112	or PHYS 112
FWIS	Freshman Writing 3	DIST	Distribution elective 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 16 credits		JUNIOR 13 credits	
MSNE 311	Materials Selection and Design 4	MSNE 302	Materials Processing 3
MSNE 401	Thermodynamics in Materials Sci 3	MSNE 303	Materials Sci Junior Laboratory 1
MSNE 406	Physical Properties of Materials 3	MSNE 415	Ceramics and Glasses 3
DIST	Distribution elective 3		or 411 or 593 or 594
OPEN	Open elective 3	DIST	Distribution 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
OPEN	Open elective 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 101/105	3	Single Variable Calculus I /AP or other credit in Calculus I
MATH 102/106	3	Single Variable Calculus II /AP or other credit in 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.