

The George W. Woodruff School of Mechanical Engineering



2005-2006 Undergraduate Handbook

Programs in
Mechanical Engineering
and
Nuclear and Radiological Engineering



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INTRODUCTION

The Woodruff School of Mechanical Engineering

This guide details the bachelor's degree programs in the George W. Woodruff School of Mechanical Engineering at Georgia Tech. The history of Georgia Tech is synonymous with mechanical engineering, which is the oldest degree program on campus. In October 1888, 129 young men registered for the only degree-granting program when the Georgia School of Technology, as the Institute was then called, opened its doors as a School of Mechanical Engineering.

Today, the Woodruff School is the second largest of the ten engineering divisions in the College of Engineering. In September 1985 the School assumed the name of one of its most distinguished alumni, Atlanta businessman and philanthropist, George W. Woodruff (class of 1917). The Woodruff School now offers undergraduate programs in mechanical engineering and nuclear and radiological engineering. We are one of the largest producers of bachelor's degrees in mechanical engineering in the country, and the undergraduate program is currently ranked 4th in the nation by *U. S. News & World Report*.

Because of the tremendous impact that mechanical engineering at Georgia Tech has had on the economy of Georgia and the Southeast, in 2000 the American Society of Mechanical Engineers (ASME) designated the Woodruff School a Mechanical Engineering Heritage Site. We are the only educational institution to receive this honor. Since 1971, only 225 sites, landmarks, and collections around the world have been designated by the ASME.

Accreditation

The undergraduate degree programs in the Woodruff School and the College of Engineering at Georgia Tech are accredited by the Accreditation Board for Engineering and Technology (ABET). Our most recent accreditation review was done in 2002. The accreditation reports for our programs may be found at

www.me.gatech.edu/me/academics/abet/

and

www.nre.gatech.edu/me/academics/abet/

In addition, in 2004 the program underwent an accreditation review by the Southern Association of Colleges and Schools (SACS).

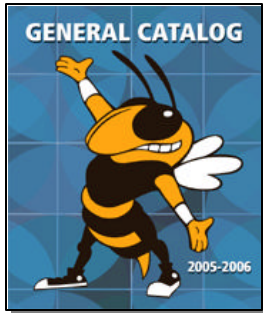
The Undergraduate Handbook

This handbook outlines the procedures that will help you earn a bachelor's degree from Georgia Tech. It can be found in its entirety at

www.me.gatech.edu/me/publicat/handbook/2005

A careful and complete reading of this document is advised. The handbook will be updated yearly, typically before the start of the fall semester. Any major changes or additions made prior to that update will be posted to our web page (**www.me.gatech.edu**), and an e-mail alert will be sent to all students affected by the change. If you have a question that this handbook does not address, please contact the Office of Student Services.

The Georgia Tech General Catalog



The Georgia Tech General Catalog is online at

www.catalog.gatech.edu

Pay particular attention to the general rules and regulations that govern all undergraduate students at Georgia Tech, particularly the section titled **Information for Undergraduate Students**, which is found at

www.catalog.gatech.edu/non-academic/undergrads

Updates to the Georgia Tech catalog, including changes, additions, and deletions that have gone into effect since the publication of the catalog may be found at

www.catalog.gatech.edu/updates

Sources of Information

In addition, there are a number of sources of information about Georgia Tech and the Woodruff School that should be of help. Copies of these documents are available in the Office of Student Services or view:

www.me.gatech.edu/me/publications/

as another source of these materials.



Brochures

- *The Bachelor's Degree Program in Mechanical Engineering*
- *Facts About the George W. Woodruff School of Mechanical Engineering*
- *The George W. Woodruff School of Mechanical Engineering: An ASME Mechanical Engineering Heritage Site*
- *The Undergraduate Nuclear and Radiological Engineering Program at Georgia Tech*

Web Sites

The Woodruff School's home page **www.me.gatech.edu** allows you to locate information about our academic programs, advisement, course offerings, research programs, faculty and staff, student organizations, events, and other items. The **Undergraduate Programs** page

www.me.gatech.edu/me/academics

should be a first stop as you navigate through the Woodruff School on the Internet. A search engine is also available at the site. For additional information about the Nuclear and Radiological Engineering program, go to

www.nre.gatech.edu/me/academics/nre

Also, visit the undergraduate advisement site at:

www.me.gatech.edu/me/academics/undergraduate/advise/

For materials about Georgia Tech, see:

www.gatech.edu

E-mail

Announcements are sometimes sent electronically, so it is important that you check your e-mail periodically. The Woodruff School uses this means of communication sparingly, usually when the information requires a timely response. At times, e-mail is used to tell you about a special event or to invite you to attend a social event in the School. You may also send a message to

undergraduate.program@me.gatech.edu

or

undergraduate.program@nre.gatech.edu

Bulletin Boards

There are several bulletin boards in Woodruff School buildings. The one located outside the Office of Student Services (in the MRDC Building) is particularly important. Notices concerning class schedules, class cancellations, room assignments, initial class meeting times, program changes, and modifications of academic rules and regulations may be found here first. **It is your responsibility to check this bulletin board frequently.**

Educational Objectives

The faculty of the Woodruff School strives to continuously improve our undergraduate programs in Mechanical Engineering and Nuclear and Radiological Engineering. The educational objectives reflect the needs, and have been reviewed by, among others, the Advisory Board, the faculty, and the students.

- To prepare students for successful careers and lifelong learning;
- To train students thoroughly in methods of analysis, including the mathematical and computational skills appropriate for engineers to use when solving problems;
- To develop the skills pertinent to the design process, including the students' ability to formulate problems, to think creatively, to communicate effectively, to synthesize information, and to work collaboratively;
- To teach students to use current experimental and data analysis techniques for engineering application;
- To instill in our students an understanding of their professional and ethical responsibilities.

Student and Faculty Expectations

The students and faculty in the Woodruff School are committed to improving the quality of undergraduate education, including better communications between students and faculty. In this spirit, the Woodruff School Undergraduate Committee, the Woodruff School Student Advisory Committee, and the Woodruff School faculty prepared the following list of expectations.

Faculty Expectations of Students

- Review prerequisite course materials,
- Read handout materials provided in class,
- Complete out-of-class assignments on time,
- Come prepared for class,
- Participate in the classroom by asking questions and contributing to any discussion,
- Get help/feedback from the professor as needed, and
- Follow the Woodruff School Honor Code.

Student Expectations of Faculty

- Provide students with written documentation concerning course content and evaluation procedures,
- Set and advertise office hours and be available to students at other times by appointment,
- Put course material in context by relating it to real-world problems and applications, current research, or the content of other courses in the curriculum,
- Respect students and be receptive to their opinions and questions,
- Treat students fairly and equitably,
- Come prepared for class,
- Return graded material in a timely fashion, and
- Set examinations appropriately for the material being tested.

Woodruff School Honor Code

Preamble

Honesty is expected of all students and practitioners of Mechanical Engineering and Nuclear and Radiological Engineering. The Georgia Tech ***Academic Honor Code*** was developed by students and faculty to remind everyone of the importance of honesty in their professional lives. It also serves to increase awareness on the part of both students and faculty of the rules regarding academic honesty and the process to be followed when these rules are broken. You are advised to review the code and bring any questions that you may have to the attention of your instructors. **The complete Georgia Tech *Academic Honor Code* can be found at**

www.honor.gatech.edu

The following items are taken from this web site:

Students must sign the Honor Agreement affirming their commitment to uphold the Honor Code before becoming a part of the Georgia Tech community. The Honor Agreement may reappear on exams and other assignments to remind students of their responsibilities under the Georgia Institute of Technology ***Academic Honor Code***.

Honor Agreement: Having read the Georgia Institute of Technology ***Academic Honor Code***, I understand and accept my responsibility as a member of the Georgia Tech Community to uphold the Honor Code at all times. In addition, my options for reporting honor violations as detailed in the code.

Honor Pledge

All students are required, when requested, to attach the following statement to any material turned in for a grade in any course in the Woodruff School:

On my honor, I/we pledge that I/we have neither given nor received inappropriate aid in the preparation of this assignment.

Signature(s)

An assignment is incomplete without this pledge. It is the responsibility of the faculty member teaching the course to make clear to the students at the beginning of the semester what is considered appropriate and what is not.

Student Conduct

In addition to the honor pledge, you should be aware of the rules for student conduct found in the *Georgia Tech General Catalog*. Of particular relevance are those rules that apply to academic misconduct. Please refer to

www.deanofstudents.gatech.edu/integrity

or

www.registrar.gatech.edu/rules/index.php

for the complete information on the code of student conduct.

THE OFFICE OF STUDENT SERVICES

The purpose of the Office of Student Services is to help you graduate with a bachelor's degree in mechanical engineering and/or nuclear and radiological engineering in a timely manner. To make this process as easy as possible, the Office of Student Services provides information about such things as advising, faculty, scholarships, summer internships, and study-abroad programs. Most importantly, please come to the Office of Student Services for any questions you have about the Woodruff School. Our staff will answer inquiries promptly and courteously and provide updated and accurate information about the Woodruff School, the College of Engineering, and the Institute.



Hours and Location

The Office of Student Services, which is sometimes referred to as the Academic Office, is located in Room 3112 in the MRDC Building. It is open daily, Monday through Friday, from 8 a.m. to noon and 1 p.m. to 5 p.m.

Staff

Though the Woodruff School is large, we make every attempt to give students a good deal of individualized attention, particularly with regard to advising. Some of our resources are described below:

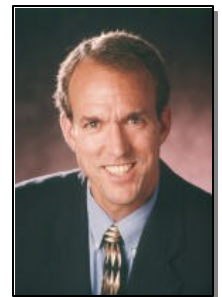
Dr. David Sanborn, Associate Chair for Undergraduate Studies
MRDC Building, Room 3103

- Oversight of the undergraduate program in the Woodruff School,
- Deals with transfer credit and technical issues,
- Provides career counseling and advice,
- *Ex officio* member of the School's Undergraduate Committee,
- Liaison for the undergraduate program with other academic units on the Georgia Tech campus.



Dr. Christopher Lynch, Associate Chair for Administration
MRDC Building, Room 3218

- Responsible for the scheduling of classes, overloads, and registration.



Dr. Farzad Rahnema, Associate Chair of the Woodruff School and
 Chair of the Nuclear and Radiological Engineering/Medical Physics Program
Neely Building, Room G104

- Administers the NRE/MP program in the Woodruff School.



Dr. Wayne Whiteman, Director of the Office of Student Services
MRDC Building, Room 3102

- Manages the Office Student Services,
- Assists the Associate Chairs of the Woodruff School,
- Assists in the advisement of both undergraduate and graduate students.



Ms. Kristi Lewis, Undergraduate Academic Advisor
MRDC Building, Room 3108

- Advises all NRE students and all ME students with 45 or more credit hours, including transfer credits.
- Provides career counseling and advice,
- Participates in various outreach programs, open houses for families of our students, orientation sessions, and advises student groups,
- Determines if students have fulfilled the requirements for graduation.



Ms. Norma Frank, Academic Advisor I
MRDC Building, Room 3112

- Advises all ME students with less than 45 credit hours, including transfer credits.
- Supports the School's undergraduate programs in classroom assignments, exam schedules, reporting of grades, registration, and ordering textbooks,
- Advises students on scheduling issues,
- Interacts closely with the students and faculty.



Ms. Terri Keita, Academic Assistant II
MRDC Building, Room 3112

- Greets and assists students, faculty, staff and visitors to the Office of Student Services,
- Provides general office information to students, faculty, staff, and visitors,
- Answers telephone queries and schedules appointments.



Ms. Dimetra Diggs-Butler, Program Coordinator I
MRDC Building, Room 3201

- Handles online overloads process, and other registration processes.



Academic Advising

The Woodruff School is committed to your academic, personal, and professional development. Academic advising is an important part of the process for planning your career at Georgia Tech. See the advisement site at:

www.me.gatech.edu/me/academics/undergraduate/advise/

In addition to the advising services in the Office of Student Services, each undergraduate in nuclear and radiological engineering will also be assigned a faculty advisor/mentor upon entry into the major. The faculty advisor will provide advice about upper-level NRE classes, out-of-class learning, and graduate school and employment information. The chair of the program will send each NRE major a letter that gives the name of the assigned faculty advisor.

THE UNDERGRADUATE PROGRAMS

Degrees

The Woodruff School offers two undergraduate degrees: A bachelor's of science degree in mechanical engineering (B.S.M.E.) and one in nuclear and radiological engineering (B.S.N.R.E.).

One hundred and twenty six credits are required for graduation with either degree. Also, with the proper planning you can complete the combined BS/MS program in five years.

What You Need to Know (Educational Outcomes)

The Woodruff School educates students who will become leaders in industry, government, and academia. We expect our graduates to serve the profession, the state of Georgia, and the country. To do this, our program will teach you:

- An ability to identify and formulate engineering problems and apply knowledge of mathematics, science and engineering to solve those problems ;
- A familiarity with statistics and linear algebra, a knowledge of chemistry and calculus-based physics with depth in at least one, and the ability to apply advanced mathematics through multivariate calculus and differential equations;
- An ability to design and conduct experiments, as well as to analyze and interpret data;
- An ability to design a system, component, or process to meet desired needs;
- An ability to function professionally and with ethical responsibility as an individual and on multidisciplinary teams;
- An ability to communicate effectively;
- A knowledge of contemporary issues and the broad education necessary to understand the impact of engineering solutions in a global and societal context;
- A recognition of the need for and an ability to engage in lifelong learning;
- An ability to use the techniques, skills, and modern engineering tools to include computational tools necessary for engineering practice;
- An ability to work professionally in both thermal and mechanical systems areas, including the design and realization of such systems (for ME graduates only);
- An ability to apply atomic and nuclear physics, and the transport and interaction of radiation with matter to nuclear and radiological systems and processes; and an ability to perform nuclear engineering design, to measure nuclear and radiation processes, and to work professionally in one or more of the nuclear or radiological fields of specialization (for NRE graduates only).

Registration

For registration instructions and questions about registration, go to

www.registrar.gatech.edu/registration/index.php

OSCAR

For the listing of all classes to be offered each semester, complete registration information, and times and meeting places of classes, go to the On-Line Student Computer Assisted Registration (OSCAR). OSCAR also has instructions, class schedules, and calendar information. OSCAR may be found on both the Georgia Tech and the Woodruff School web sites.

<https://oscar.gatech.edu>

Restricted or Graduate Courses

To register for restricted or graduate courses, ask the appropriate department to enter the permit online. Once the permit is obtained, you need to request a level restriction override. This can be done by e-mailing the Registrar's Office at:

comments@registrar.gatech.edu

Finally, you need to register for the class.

Holds

If your personal registration shows a **hold**, the department placing the hold is the only one that can remove the hold. For an ME or NRE hold, go to the Office of Student Services.

Cross Registration

If you would like to take courses not offered at Georgia Tech, you might be qualified to do so through the cross-registration program administered through the University Center in Georgia. View the Registrar's web site for the rules and regulations at

www.registrar.gatech.edu/registration/cross.php

Bring the completed form to the Office of Student Services to obtain a signature.

THE CURRICULUM

The undergraduate curriculum in mechanical engineering covers the fundamental aspects of the field, emphasizes basic principles, and educates you in the use of these principles to solve many kinds of engineering problems. The curriculum (programs of study) by hours for 2006-2007 and by semester with detailed footnotes for both 2005-2006 and 2006-2007 for the B.S.M.E. and the B.S.N.R.E. programs follow. In addition, there is a curriculum conversion program for mechanical engineering, which describes the new (2006-2007) curriculum. You may also access this material at

www.me.gatech.edu/me/academics/advise

Prerequisites and Corequisites

The prerequisites and corequisites for each course in ME and NRE are shown after the curriculum charts. Also, prerequisites for each course can be found in the course syllabi accessible from our home page at

www.me.gatech.edu/me/academics

It is your responsibility to check the prerequisites before registering for any course. OSCAR allows you to display course catalog descriptions, including prerequisites, while you are registering.

Overloads of Closed Sections and Prerequisite Waivers

To register for a section of a course that is closed, go to the school or department offering the course and request an **Overload**. For an ME or NRE overload, permit, or prerequisite waiver, go to

www.me.gatech.edu/overload

to obtain and fill out an Overload Request Form.

ME and NRE Electives

Elective courses are generally taught once a year or once every two years. To learn which mechanical engineering and nuclear and radiological engineering electives will be offered in a particular semester, check OSCAR. Listed below are the elective course options for ME and NRE.

When planning your schedule, it is important that you keep alternative ME and NRE electives in mind because a course might be filled, there might be time conflicts, or the class might be canceled if the enrollment is less than 15 students. However, the Woodruff School tries to offer a course when there is sufficient demand, even if the class was not planned for that semester. Also, be especially careful in planning your electives for your last semester, particularly if it is a summer semester. There are very few electives offered in the summer.

Mechanical Engineering Electives

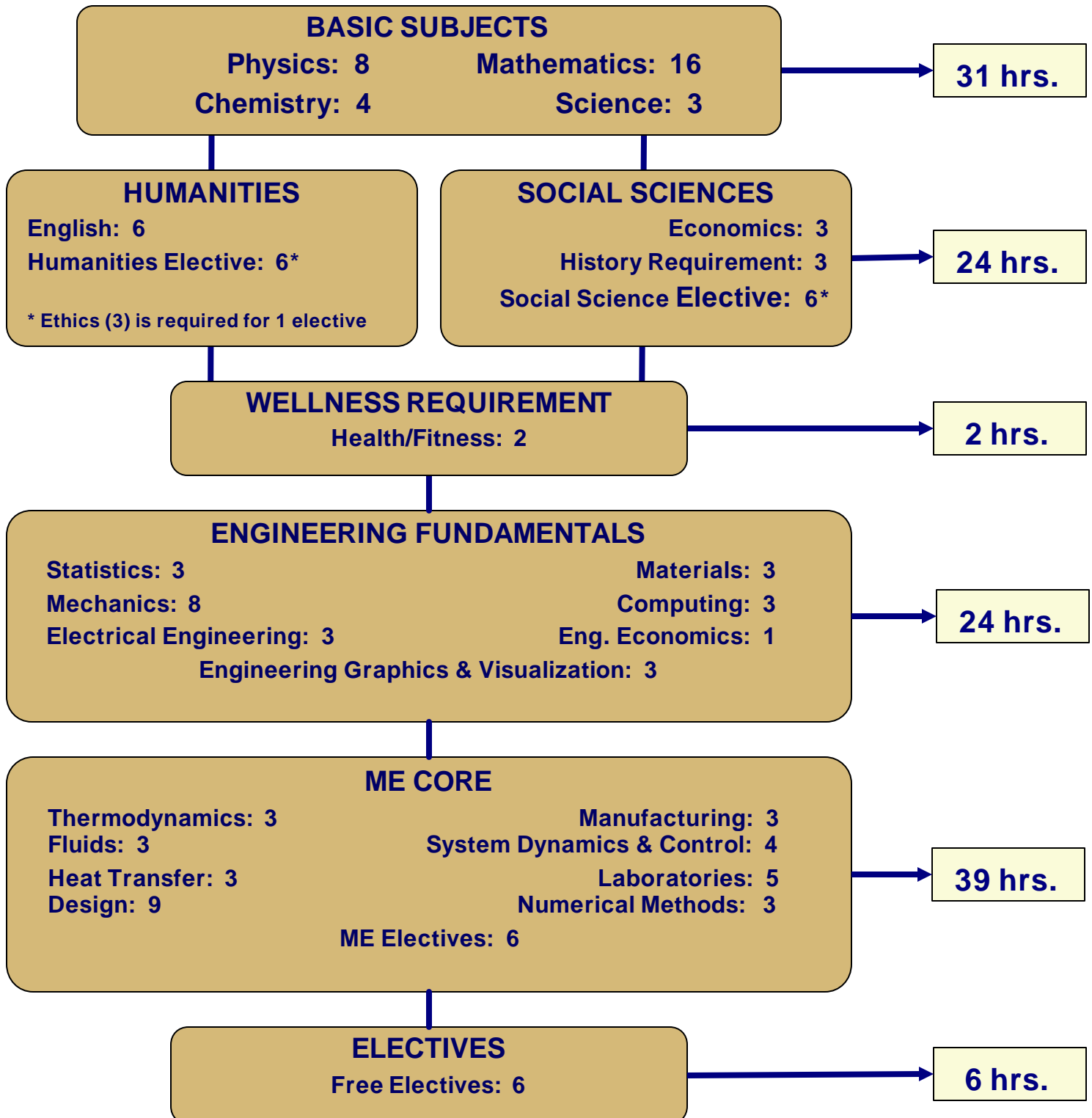
ME 4041	Interactive Computer Graphics and Computer-Aided Design
ME 4113	Kinematics and Dynamics of Linkages
ME 4171	Environmentally Conscious Design and Manufacturing
ME 4172	Designing Sustainable Engineering Systems
ME 4189	Structural Vibrations
ME 4193	Tribological Design

ME 4211	Manufacturing Engineering and Process Applications
ME 4213	Materials Selection and Failure Analysis
ME 4321	Refrigeration and Air Conditioning
ME 4324	Power Generation Technology
ME 4330	Heat and Mass Exchangers
ME 4340	Applied Fluid Mechanics
ME 4342	Computational Fluid Dynamics
ME 4447	Microprocessor Control of Manufacturing Systems
ME 4451	Robotics
ME 4698	Research Internship, ME
ME 4699	Research Special Problems, Mechanical Engineering
ME 4757	Biofluid Mechanics
ME 4758	Biosolid Mechanics
ME 4760	Engineering Acoustics and Noise Control
ME 4763	Pulping and Chemical Recovery
ME 4764	Bleaching and Papermaking
ME 4775	Polymer Science and Engineering I: Formation and Properties
ME 4776	Polymer Science and Engineering II: Analysis, Processing and Laboratory
ME 4777	Introduction to Polymer Science and Engineering
ME 4781	Biomedical Instrumentation
ME 4782	Biosystems Analysis
ME 4791	Mechanical Behavior of Composites
ME 4793	Composite Materials and Processes
ME 4794X	Composite Materials and Manufacturing
ME 480X	Special Topics, Mechanical Engineering
ME 481X	Special Topics, Mechanical Engineering
ME 482X	Special Topics, Mechanical Engineering
ME 483X	Special Topics, Mechanical Engineering
ME 4903	Non-Research Special Problems, Mechanical Engineering

Nuclear and Radiological Engineering Electives

NRE 4234	Nuclear Criticality Safety Engineering
NRE 4266	Light Water Reactor Technology
NRE 4404	Radiological Assessment and Waste Management
NRE 4430	Nuclear Regulatory Requirements
NRE 4610	Introduction to Plasma Physics and Fusion Engineering
NRE 4698	Research Internship, NRE
NRE 4699	Research Special Problems, Nuclear and Radiological Engineering
NRE/MP 4750	Radiation Imaging
NRE 4770	Nuclear Chemical Engineering
NRE 480X	Special Topics in Nuclear and Radiological Engineering
NRE 4903	Non-Research Special Problems, Nuclear and Radiological Engineering

BSME CURRICULUM BY HOURS (2006-2007)



= 126 Hours for BSME

ME Undergraduate Curriculum (2005-2006)

FRESHMAN	Fall	<div>CHEM 1310</div> <div>Chemistry 1</div> <div>3-3-4</div>	<div>MATH 1501</div> <div>Calculus 1</div> <div>(Minimum Grade C)</div> <div>4-0-4</div>	<div>HISTORY</div> <div>HIST 2111, HIST 2112, POL 1101, INTA 1200 or PUBP 3000 (See Note 4)</div> <div>3-0-3</div>	<div>WELLNESS</div> <div>HPS 1040, HPS 1062 HPS 1063 or HPS 1064</div> <div>X-X-2</div>	<div>ENGL 1101</div> <div>English Composition 1</div> <div>3-0-3</div>	= 16 hrs	
	Spring	<div>PHYS 2211</div> <div>Physics 1</div> <div>3-3-4</div> <div>MATH 1502*</div>	<div>MATH 1502</div> <div>Calculus 2</div> <div>(Minimum Grade C)</div> <div>4-0-4</div> <div>MATH 1501</div>	<div>CS 1371</div> <div>Introduction to Computing</div> <div>3-0-3</div>	<div>ME/AE/CEE 1770</div> <div>Engineering Graphics</div> <div>(See Note 6, No W's)</div> <div>2-3-3</div> <div>MATH 1501*</div>	<div>ENGL 1102</div> <div>English Composition 2</div> <div>3-0-3</div> <div>ENGL 1101</div>	= 17 hrs	
SOPHOMORE	Fall	<div>PHYS 2212</div> <div>Physics 2</div> <div>3-3-4</div> <div>PHYS 2211</div>	<div>MATH 2401</div> <div>Calculus 3</div> <div>(Minimum Grade C)</div> <div>4-0-4</div> <div>MATH 1502</div>	<div>ME 2016</div> <div>Computing Techniques</div> <div>3-0-3</div> <div>MATH 1502, CS 1371</div>	<div>ME 2110</div> <div>Creative Dec. & Design</div> <div>(See Note 6, No W's)</div> <div>2-3-3</div> <div>ME/AE/CEE 1770 ME 2211*, ME 2016*</div>	<div>ME 2211</div> <div>Introduction to Mechanics</div> <div>3-0-3</div> <div>PHYS 2211, MATH 2401*</div>	= 17 hrs	
	Spring	<div>ECE 3710</div> <div>Circuits & Electronics</div> <div>2-0-2</div> <div>PHYS 2212</div>	<div>MATH 2403</div> <div>Differential Equations</div> <div>(Minimum Grade C)</div> <div>4-0-4</div> <div>MATH 1502</div>	<div>ME 2202</div> <div>Dynamics of Rigid Bodies</div> <div>3-0-3</div> <div>ME 2016, ME 2211</div>	<div>MSE 2001</div> <div>Engineering Materials</div> <div>3-0-3</div> <div>CHEM 1310</div>	<div>SCIENCE ELECT.</div> <div>CHEM 1311 & 1312, BIOL 1510, BIOL 1520, EAS 1600, EAS 1601 or PHYS 2213</div> <div>X-X-X</div>	= 15 hrs	
JUNIOR	Fall	<div>ECE 3741</div> <div>Instrument & Electronics Lab</div> <div>0-3-1</div> <div>ECE 3710</div>	<div>ME 3015</div> <div>System Dynamics & Control</div> <div>4-0-4</div> <div>ME 2202, MATH 2403 ECE 3741*</div>	<div>ME 3201</div> <div>Mechanics of Materials</div> <div>3-0-3</div> <div>ME 2202, ME 2211, MSE 2001*, MATH 2403*</div>	<div>ME 3322</div> <div>Thermo- dynamics</div> <div>3-0-3</div> <div>PHYS 2211, MATH 2403 ME 2016</div>	<div>ME 3340</div> <div>Fluid Mechanics</div> <div>3-0-3</div> <div>ME 2202, ME 3322*</div>	<div>ECONOMICS</div> <div>ECON 2100, 2105 or 2106 (See Note 5)</div> <div>3-0-3</div>	= 17 hrs
	Spring	<div>ECE 3301</div> <div>Energy Conversion & Mechatronics</div> <div>1-2-2</div> <div>ECE 3710</div>	<div>ME 3056</div> <div>Experimental Method Lab</div> <div>(See Note 6, No W's)</div> <div>1-2-2</div> <div>ME 3201, ME 3015, MATH/ISYE 3770, ME 3345*</div>	<div>ME 3180</div> <div>Machine Design</div> <div>3-0-3</div> <div>ME/AE/CEE 1770, ME 3201</div>	<div>ME 3345</div> <div>Heat Transfer</div> <div>3-0-3</div> <div>ME 3340</div>	<div>ISYE 3025</div> <div>Engineering Economics</div> <div>1-0-1</div> <div>Economics (ECON 2100, 2105 or 2106)</div>	<div>MATH/ISYE 3770</div> <div>Statistics</div> <div>3-0-3</div> <div>MATH 2401</div>	= 14 hrs
SENIOR	Fall	<div>ME 4053</div> <div>ME Systems Lab</div> <div>(See Note 6, No W's)</div> <div>1-2-2</div> <div>ME 3056, ME 3345, MATH/ISYE 3770</div>	<div>ME 4210</div> <div>Manufacturing Processes & Engineering</div> <div>3-0-3</div> <div>ME 3345, MATH/ISYE 3770</div>	<div>ME 4315</div> <div>Energy System Analysis & Design</div> <div>3-0-3</div> <div>ME 3345, ISYE 3025 ME/AE/CEE 1770</div>	<div>Social Science Elective</div> <div>3-0-3</div>	<div>Humanities Elective</div> <div>3-0-3</div>	= 14 hrs	
	Spring	<div>ME 4055</div> <div>Experimental Engineering Lab</div> <div>0-3-1</div> <div>ME 4053</div>	<div>ME 4182</div> <div>Capstone Design</div> <div>(See Note 6, No W's)</div> <div>1-6-3</div> <div>ME 2110, ME 3180 ME 4210, ME 4315</div>	<div>Technical Elective</div> <div>(See Note 2)</div> <div>X-X-3</div>	<div>Technical Elective</div> <div>(See Note 2)</div> <div>X-X-3</div>	<div>Ethics</div> <div>HTS 2084, INTA 2030, PST 3105, PST 3109, PST 3127 or PST 4176 (See Note 1)</div> <div>3-0-3</div>	<div>Social Science or Humanities Elect.</div> <div>(See Note 3)</div> <div>3-0-3</div>	= 16 hrs

NOTES:

1. PST classes are humanities, HTS & INTA classes are social sciences.
2. Technical Electives may be selected from any course offered in the Colleges of Engineering, Science, or Computing at the 3000 or 4000 level excluding Psychology (PSYC) and Applied Physiology (APPH). This course cannot not substantially overlap an undergraduate course which you intend to include in your degree petition.
3. If Ethics is humanities, social science elective is required for this class. If Ethics is social science, humanities elective is required for this class.
4. No credit is awarded for both INTA 1200 and POL 1101.
5. No credit is awarded for (ECON 2100 and ECON 2105) or (ECON 2100 and ECON 2106).
6. ME 1770, 2110, 3056, 4053 and 4182 cannot be dropped without permission from the advisor.

Pre-Reqs and Co-Reqs*

126 Total Hrs

GRADUATION REQUIREMENTS:

1. No PASS/FAIL classes allowed.
2. Minimum grade of D required for each class except as noted.
3. Overall GPA must be greater than 2.0.
4. Overall ME GPA must be greater than 2.0.
5. No more than 3 withdrawals (W's) are allowed in ME classes except for documented and approved reasons.

ME Undergraduate Curriculum (2006-2007)

FRESHMAN	Fall	<div>CHEM 1310</div> <div>Chemistry 1</div> <div>3-3-4</div>	<div>MATH 1501</div> <div>Calculus 1 (Minimum Grade C)</div> <div>4-0-4</div>	<div>HISTORY</div> <div>HIST 2111, HIST 2112, POL 1101, INTA 1200 or PUBP 3000 (Social Science, See Note 4)</div> <div>3-0-3</div>	<div>WELLNESS</div> <div>HPS 1040, HPS 1062 HPS 1063 or HPS 1064</div> <div>X-X-2</div>	<div>ENGL 1101</div> <div>English Composition 1 (Humanities)</div> <div>3-0-3</div>	= 16 hrs	
	Spring	<div>PHYS 2211</div> <div>Physics 1</div> <div>3-3-4</div> <div>MATH 1502*</div>	<div>MATH 1502</div> <div>Calculus 2 (Minimum Grade C)</div> <div>4-0-4</div> <div>MATH 1501</div>	<div>CS 1371</div> <div>Introduction to Computing</div> <div>3-0-3</div>	<div>ME/AE/CEE 1770</div> <div>Engineering Graphics (See Note 6, No W's)</div> <div>2-3-3</div> <div>MATH 1501*</div>	<div>ENGL 1102</div> <div>English Composition 2 (Humanities)</div> <div>3-0-3</div> <div>ENGL 1101</div>	= 17 hrs	
SOPHOMORE	Fall	<div>PHYS 2212</div> <div>Physics 2</div> <div>3-3-4</div> <div>PHYS 2211</div>	<div>MATH 2401</div> <div>Calculus 3 (Minimum Grade C)</div> <div>4-0-4</div> <div>MATH 1502</div>	<div>ME 2016</div> <div>Computing Techniques</div> <div>3-0-3</div> <div>MATH 1502, CS 1371</div>	<div>MSE 2001</div> <div>Engineering Materials</div> <div>3-0-3</div> <div>CHEM 1310</div>	<div>COE 2001</div> <div>Statics</div> <div>2-0-2</div> <div>PHYS 2211, MATH 1502</div>	= 16 hrs	
	Spring	<div>ECE 3710</div> <div>Circuits & Electronics</div> <div>2-0-2</div> <div>PHYS 2212</div>	<div>MATH 2403</div> <div>Differential Equations (Minimum Grade C)</div> <div>4-0-4</div> <div>MATH 1502</div>	<div>ME 2202</div> <div>Dynamics of Rigid Bodies</div> <div>3-0-3</div> <div>COE 2001</div>	<div>ME 2110</div> <div>Creative Dec. & Design (See Note 6, No W's)</div> <div>2-3-3</div> <div>ME/AE/CEE 1770 COE 2001*, ME 2016*</div>	<div>SCIENCE ELECT.</div> <div>CHEM 1311 & 1312, BIOL 1510, BIOL 1520, EAS 1600, EAS 1601 or PHYS 2213</div> <div>X-X-3</div>	= 15 hrs	
JUNIOR	Fall	<div>ECE 3741</div> <div>Instrument & Electronics Lab</div> <div>0-3-1</div> <div>ECE 3710</div>	<div>COE 3001</div> <div>Deformable Bodies</div> <div>3-0-3</div> <div>COE 2001, MSE 2001*, MATH 2403*</div>	<div>ME 3322</div> <div>Thermo- dynamics</div> <div>3-0-3</div> <div>PHYS 2211, MATH 2403</div>	<div>ME 3340</div> <div>Fluid Mechanics</div> <div>3-0-3</div> <div>ME 2202, ME 3322*</div>	<div>ECONOMICS</div> <div>ECON 2100, 2105 or 2106 (Social Science, See Note 5)</div> <div>3-0-3</div>	<div>Social Science Elective</div> <div>3-0-3</div>	= 16 hrs
	Spring	<div>ME 3015</div> <div>System Dynamics & Control</div> <div>4-0-4</div> <div>ME 2202, MATH 2403 ECE 3710</div>	<div>ME 3345</div> <div>Heat Transfer</div> <div>3-0-3</div> <div>ME 3340</div>	<div>MATH/ISYE 3770</div> <div>Statistics</div> <div>3-0-3</div> <div>MATH 2401</div>	<div>ISYE 3025</div> <div>Engineering Economics</div> <div>1-0-1</div> <div>Economics (ECON 2100, 2105 or 2106)</div>	<div>Ethics</div> <div>HTS 2084, INTA 2030, PST 3105, PST 3109, PST 3127 or PST 4176 (Hum or Social Science, See Note 1)</div> <div>3-0-3</div>	<div>Humanities Elective</div> <div>3-0-3</div>	= 17 hrs
SENIOR	Fall	<div>Design Elective</div> <div>ME 3180 (Machine Design) or ME 4315 (Thermal Sys Design)</div> <div>3-0-3</div> <div>ISYE 3025, ME/AE/CEE 1770 COE3001 (3180), ME3345 (4315)</div>	<div>ME 4210</div> <div>Manufacturing Processes & Engineering</div> <div>3-0-3</div> <div>ME 3345, MATH/ISYE 3770</div>	<div>ME 3057</div> <div>Experimental Methods Lab (See Note 6, No W's)</div> <div>2-3-3</div> <div>COE 3001, ME 3015, MATH/ISYE 3770*, ME 3345*</div>	<div>ME Elective</div> <div>(3000 or 4000 level ME Classes, See Note 2)</div> <div>X-X-3</div>	<div>Free Elective</div> <div>(Must be 2000 level or above, See Note 7)</div> <div>X-X-3</div>	= 15 hrs	
	Spring	<div>ME 4053</div> <div>ME Systems Lab (See Note 6, No W's)</div> <div>1-2-2</div> <div>ME 3057, ME 3345, MATH/ISYE 3770</div>	<div>ME 4182</div> <div>Capstone Design (See Note 6, No W's)</div> <div>1-6-3</div> <div>ME 2110, ME 4210, ME 3180 or ME 4315</div>	<div>ME Elective</div> <div>(3000 or 4000 level ME Classes, See Note 2)</div> <div>X-X-3</div>	<div>Social Science or Humanities Elect.</div> <div>(See Note 3)</div> <div>3-0-3</div>	<div>Free Elective</div> <div>(Must be 2000 level or above, See Note 7)</div> <div>X-X-3</div>	= 14 hrs	

NOTES:

1. PST classes are humanities, HTS & INTA classes are social sciences.
2. ME electives are any 3000 or 4000 level ME class, excluding ME 3720. This course cannot significantly overlap any course material which you intend to use towards your BSME degree.
3. If Ethics is humanities, social science elective is required for this class. If Ethics is social science, humanities elective is required. Need 12 hrs of social science & 12 hrs of humanities.
4. Social Science credit is only awarded for INTA 1200 or POL 1101, NOT both.
5. No social science credit is awarded for (ECON 2105 or ECON 2106) if ECON 2100 was taken.
6. ME 1770, 2110, 3057, 4053 and 4182 cannot be dropped without permission from the advisor.
7. Free electives may be any 2000 level classes or above. Free electives may not duplicate any other material used for your BSME.

Pre-Reqs and Co-Reqs*

126 Total Hrs

GRADUATION REQUIREMENTS:

1. No PASS/FAIL classes allowed.
2. Minimum grade of D required for each class except as noted.
3. Overall GPA must be greater than 2.0.
4. Overall ME GPA must be greater than 2.0.
5. No more than 3 withdrawals (W's) are allowed in ME classes except for documented and approved reasons.

ME CURRICULUM CONVERSION

Assumptions

- The new curriculum refers to the 2006-2007 Curriculum.
- The old curriculum refers to the 2005-2006 Curriculum and earlier.
- The new curriculum is available to all students who will be taking classes and graduating Summer 2006 and later. If you graduate Spring 2006 or before, you cannot use the new curriculum to graduate.
- You may continue to use the old curriculum if you started taking classes at GT before Summer 2006. However, ECE 3301 will only be offered until Spring 2006, so if you are going to graduate under the old curriculum, you must take this class before Spring 2006.
- If you graduate after Spring 2006, but are not taking classes after Spring 2006, you cannot use the new curriculum to graduate.
- If you have started under the old curriculum and want to move to the new curriculum, you can substitute classes per the substitution tables. Please see the Substitutions section for further details.

Curriculum Changes

- Both curricula require 126 credit hours.
- Below are the detailed changes. This table only summarized the changes which are being made from the old curriculum to the new curriculum.

Class (hours)	Old Curriculum (‘99 thru Spring ‘06)	New Curriculum (beginning Summer ‘06)
ECE 3301 (2)	Required	Not in curriculum
ME 3056 (2)	Required	Replaced by ME 3057 (3)
ME 4055 (1)	Required	Not in curriculum
ME 2211 (3)	Required	Replaced by COE 2001 (2)
ME 3201 (3)	Required	Replaced by COE 3001 (3)
Technical Electives (6)	Required	Replaced by ME Electives (6)
ME 3180 (3) and ME 4315 (3)	Both classes required	Students select one class
Free Electives (6)	Not in curriculum	Added to curriculum

Substitutions

New Curriculum Substitutions - The table below reviews all of the allowable substitutions into the new curriculum. For example, if you started under the old curriculum and want to change to the new curriculum but have already taken ME 2211, then use the chart below to see that you will get credit for COE 2001 in the new curriculum.

STUDENTS GRADUATING UNDER THE NEW CURRICULUM (summer 2006 and beyond)	
You may substitute...	for the required ...
ME 2211 (3)	COE 2001 (2) + Free Elective (1)
ME 2211 (3) + ME 3201 (3)	COE 2001 (2) + COE 3001 (3) + Free Elective (1)
ME 2211 (3) + COE 3001 (3)	COE 2001 (2) + COE 3001 (3) + Free Elective (1)
ME 3201 (3)	COE 3001 (3)**
ME 3056 (2) + ME 4801 (1)	ME 3057 (3)
ME 3180 (3)	ME Design Elective (3)
ME 4315 (3)	ME Design Elective (3)
ME 3180 (3) + ME 4315 (3)	ME Design Elective (3) + ME Elective (3)
ECE 3301 (2)	Free Elective (2)
Technical Elective (3)	ME Elective (3) – If you took an ME class or Free Elective (3) – If it wasn't an ME class

** If you have taken ME 3201, you can not take the ME elective ME 42XX Mechanical Behavior of Materials.

Old Curriculum Substitutions – The table below shows the substitutions allowed if you choose to graduate under the old curriculum.

STUDENTS GRADUATING UNDER THE OLD CURRICULUM (summer 2005 and beyond*)	
You may substitute...	for the required ...
ME 4801 (1)	ME 4055 (1)
ME 3057 (3)	ME 3056 (2) + ME 4055 (1)
COE 3001 (3)	ME 3201 (3)
COE 2001 (2) + Free Elective (1)	ME 2211 (3)

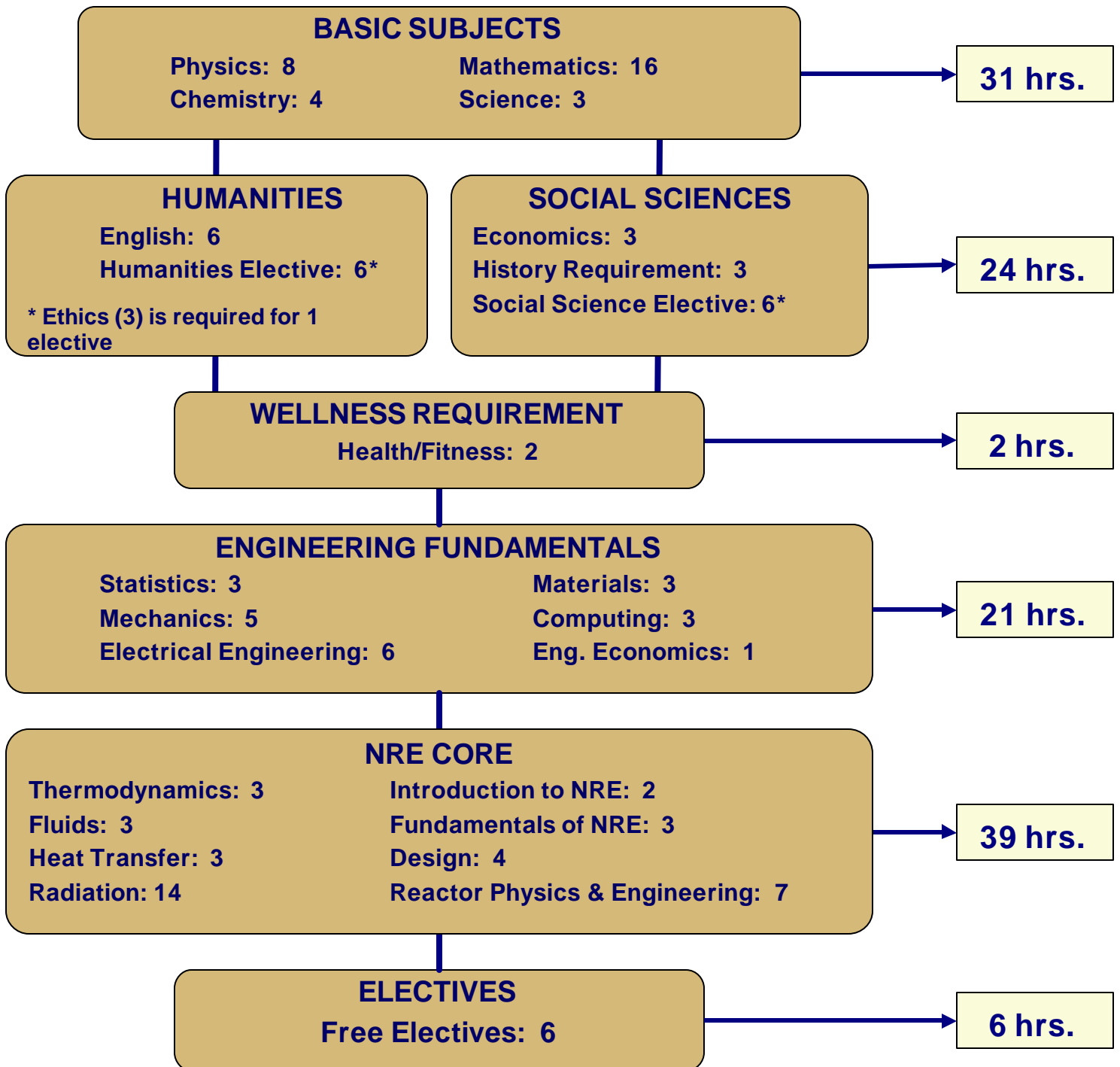
* Students can graduate under any curriculum in effect while they have been enrolled.

Pre/Corequisites for ME Courses

You must satisfactorily complete the appropriate prerequisites or their equivalents before enrolling in any ME course. Corequisites may be taken simultaneously.

Course	Prerequisites	Corequisites
ME 1750	None	
ME 1770	None	MATH 1501
ME 2016	MATH 1502, CS 1371	
ME 2110	ME/AE/CE 1770	COE 2001, ME 2016
ME 2202	COE 2001	
ME 3015	MATH 2403, ME 2202, ECE 3710	
ME 3057	ME 3015, COE 3001	ME 3345, MATH/ISYE 3770
ME 3180	ME/AE/CE 1770, COE 3001, ISYE 3025	
ME 3322	PHYS 2211, MATH 2403	
ME 3340	ME 2202	ME 3322
ME 3345	ME 3340	
ME 3720	PHYS 2211, MATH 2403, CHEM 1310	
ME 4041	ME 3180, ME 3345	
ME 4053	ME 3057, ME3345, MATH /ISYE 3770	
ME 4055	ME 4053	
ME 4113	ME 2202	
ME 4171	Senior Standing	
ME 4172	Senior Standing	
ME 4182	ME 2110, ME 3180, ME 4315, ME 4210	
ME 4189	ME 3015	
ME 4193	ME 3340, COE 3001	
ME 4210	ME 3345, ISYE/ MATH 3770	
ME 4211	ISYE/ MATH 3770, COE 3001	
ME 4213	COE 3001	
ME 4315	ME/AE/CE 1770, ISYE 3025, ME 3345	
ME 4321	ME 3345	
ME 4324	ISYE 3025, ME 3345	
ME 4330	ME 3345	
ME 4340	ME 3345	
ME 4342	ME 3345	
ME 4447	ME 3057	
ME 4451	ME 3015	
ME 4754	ECE 3040, ECE 3710	
ME 4757	ME 3340	
ME 4758	COE 3001	
ME 4760	MATH 2403	
ME 4775	CHEM 2312, CHEM 3411	
ME 4763	Senior Standing	
ME 4764	Senior Standing	
ME 4776	CHE/CHEM/ME/MSE/PTFE 4775	
ME 4777	MSE 2001, CHEM 2311	
ME 4781	ECE 3050 or ECE 3710	
ME 4782	MATH 1502	
ME 4791	COE 3001	
ME 4793	CHEM 1310, PHYS 2212	
ME 4794	CHEM 1310, PHYS 2212	
COE 2001	PHYS 2211, MATH 1502	
COE 3001	COE 2001	MSE 2001, MATH 2403

BSNRE CURRICULUM BY HOURS (2006-2007)



= 126 Hours for BSNRE

NRE Undergraduate Curriculum (2005-2006)

FRESHMAN	Fall	<div>CHEM 1310</div> <div>Chemistry 1</div> <div>3-3-4</div>	<div>MATH 1501</div> <div>Calculus 1 (Minimum Grade C)</div> <div>4-0-4</div>	<div>HISTORY</div> <div>HIST 2111, HIST 2112, POL 1101, INTA 1200 or PUBP 3000 (See Note 4)</div> <div>3-0-3</div>	<div>WELLNESS</div> <div>HPS 1040, HPS 1062 HPS 1063 or HPS 1064</div> <div>X-X-2</div>	<div>ENGL 1101</div> <div>English Composition 1</div> <div>3-0-3</div>	= 16 hrs	
	Spring	<div>PHYS 2211</div> <div>Physics 1</div> <div>3-3-4</div> <div>MATH 1502*</div>	<div>MATH 1502</div> <div>Calculus 2 (Minimum Grade C)</div> <div>4-0-4</div> <div>MATH 1501</div>	<div>CS 1371</div> <div>Introduction To Computing</div> <div>3-0-3</div>	<div>NRE 2110</div> <div>Introduction To NRE</div> <div>2-0-2</div>	<div>ENGL 1102</div> <div>English Composition 2</div> <div>3-0-3</div> <div>ENGL 1101</div>	= 16 hrs	
SOPHOMORE	Fall	<div>PHYS 2212</div> <div>Physics 2</div> <div>3-3-4</div> <div>PHYS 2211</div>	<div>MATH 2401</div> <div>Calculus 3 (Minimum Grade C)</div> <div>4-0-4</div> <div>MATH 1502</div>	<div>ME 2211</div> <div>Introduction To Mechanics</div> <div>3-0-3</div> <div>PHYS 2211, MATH 2401*</div>	<div>ECONOMICS</div> <div>ECON 2100, 2105 or 2106 (See Note 5)</div> <div>3-0-3</div>	<div>Humanities Elective</div> <div>3-0-3</div>	= 17 hrs	
	Spring	<div>PHYS 2213</div> <div>Introduction to Modern Physics</div> <div>3-0-3</div> <div>PHYS 2212</div>	<div>MATH 2403</div> <div>Differential Equations (Minimum Grade C)</div> <div>4-0-4</div> <div>MATH 1502</div>	<div>NRE 3212</div> <div>NRE Fundamentals</div> <div>3-0-3</div> <div>PHYS 2211, MATH 2401 PHYS 2213*, MATH 2403*</div>	<div>MSE 2001</div> <div>Engineering Materials</div> <div>3-0-3</div> <div>CHEM 1310</div>	<div>ECE 3710</div> <div>Circuits & Electronics</div> <div>2-0-2</div> <div>PHYS 2212</div>	= 15 hrs	
JUNIOR	Fall	<div>NRE 3301</div> <div>Radiation Physics</div> <div>3-0-3</div> <div>PHYS 2213</div>	<div>ME 3322</div> <div>Thermo- dynamics</div> <div>3-0-3</div> <div>ME 2211, MATH 2403</div>	<div>ME 3340</div> <div>Fluid Mechanics</div> <div>3-0-3</div> <div>ME 2202, ME 3322*</div>	<div>ECE 3741</div> <div>Instrument & Electronics Lab</div> <div>0-3-1</div> <div>ECE 3710</div>	<div>ISYE 3025</div> <div>Engineering Economics</div> <div>1-0-1</div> <div>Economics (ECON 2100, 2105 or 2106)</div>	<div>Social Science Elective</div> <div>3-0-3</div>	= 14 hrs
	Spring	<div>NRE 3112</div> <div>Radiation Detection (See Note 6, No W's)</div> <div>2-3-3</div> <div>NRE 2110, NRE 3301</div>	<div>NRE 3316</div> <div>Radiation Protection Engineering</div> <div>3-0-3</div> <div>NRE 3301, MATH 2403</div>	<div>ME 3201</div> <div>Mechanics of Materials</div> <div>3-0-3</div> <div>ME 2211, MSE 2001*, MATH 2403*</div>	<div>ME 3345</div> <div>Heat Transfer</div> <div>3-0-3</div> <div>ME 3340, MATH 2403</div>	<div>ECE 3301</div> <div>Energy Conversion & Mechatronics</div> <div>1-2-2</div> <div>ECE 3710</div>	<div>MATH/ISYE 3770</div> <div>Statistics (Minimum Grade C)</div> <div>3-0-3</div> <div>MATH 2401</div>	= 17 hrs
SENIOR	Fall	<div>NRE 4204</div> <div>Nuclear Reactor Physics</div> <div>4-0-4</div> <div>NRE 3301, MATH 3770</div>	<div>NRE 4214</div> <div>Reactor Engineering</div> <div>3-0-3</div> <div>ME 3340, ME 3345</div>	<div>NRE 4328</div> <div>Radiation Sources & Applications</div> <div>3-0-3</div> <div>NRE 3301, (NRE 3112 OR NRE 3212)</div>	<div>Technical Elective (See Note 2)</div> <div>X-X-3</div>	<div>Ethics</div> <div>HTS 2084, INTA 2030, PST 3105, PST 3109, PST 3127 or PST 4176 (See Note 1)</div> <div>3-0-3</div>	= 16 hrs	
	Spring	<div>NRE 4206</div> <div>Radiation Physics Lab (See Note 6, No W's)</div> <div>1-3-2</div> <div>NRE 3212, NRE 4204</div>	<div>NRE 4232</div> <div>NRE Design (See Note 6, No W's)</div> <div>1-9-4</div> <div>NRE 4328, NRE 4204*</div>	<div>Technical Elective (See Note 2)</div> <div>X-X-3</div>	<div>Technical Elective (See Note 2)</div> <div>X-X-3</div>	<div>Social Science Or Humanities Elect. (See Note 3)</div> <div>3-0-3</div>	= 15 hrs	

NOTES:

1. PST classes are humanities, HTS & INTA classes are social sciences.
2. Technical Electives may be selected from any course offered in the Colleges of Engineering, Science, or Computing at the 3000 or 4000 level excluding Psychology (PSYC) and Applied Physiology (APPH). This course cannot substantially overlap an undergraduate course which you intend to include in your degree petition.
3. If Ethics is humanities, social science elective is required for this class. If Ethics is social science, humanities elective is required for this class.
4. No credit is awarded for both INTA 1200 and POL 1101.
5. No credit is awarded for (ECON 2100 and ECON 2105) or (ECON 2100 and ECON 2106).
6. NRE 3112, NRE 4206 and NRE 4232 cannot be dropped without approval from the advisor.

Pre-Reqs and Co-Reqs*

126 Total Hrs

GRADUATION REQUIREMENTS:

1. No PASS/FAIL classes allowed.
2. Minimum grade of D required for each class except as noted.
3. Overall GPA must be greater than 2.0.
4. Overall ME GPA must both be greater than 2.0.
5. No more than 3 withdrawals (W's) are allowed in ME or NRE classes except for documented and approved reasons.

NRE Undergraduate Curriculum (2006-2007)

FRESHMAN	Fall	CHEM 1310 Chemistry 1 3-3-4	MATH 1501 Calculus 1 (Minimum Grade C) 4-0-4	HISTORY HIST 2111, HIST 2112, POL 1101, INTA 1200 or PUBP 3000 (See Note 4) 3-0-3	WELLNESS HPS 1040, HPS 1062 HPS 1063 or HPS 1064 X-X-2	ENGL 1101 English Composition 1 3-0-3	= 16 hrs	
	Spring	PHYS 2211 Physics 1 3-3-4 MATH 1502*	MATH 1502 Calculus 2 (Minimum Grade C) 4-0-4 MATH 1501	CS 1371 Introduction To Computing 3-0-3	NRE 2110 Introduction To NRE 2-0-2	ENGL 1102 English Composition 2 3-0-3 ENGL 1101	= 16 hrs	
SOPHOMORE	Fall	PHYS 2212 Physics 2 3-3-4 PHYS 2211	MATH 2401 Calculus 3 (Minimum Grade C) 4-0-4 MATH 1502	COE 2001 Statics 2-0-2 PHYS 2211, MATH 2401*	ECONOMICS ECON 2100, 2105 or 2106 (See Note 5) 3-0-3	Humanities Elective 3-0-3	= 16 hrs	
	Spring	PHYS 2213 Introduction to Modern Physics 3-0-3 PHYS 2212	MATH 2403 Differential Equations (Minimum Grade C) 4-0-4 MATH 1502	NRE 3212 NRE Fundamentals 3-0-3 PHYS 2211, MATH 2401 PHYS 2213*, MATH 2403*	MSE 2001 Engineering Materials 3-0-3 CHEM 1310	ECE 3710 Circuits & Electronics 2-0-2 PHYS 2212	= 15 hrs	
JUNIOR	Fall	NRE 3301 Radiation Physics 3-0-3 PHYS 2213	ME 3322 Thermo- dynamics 3-0-3 PHYS 2211, MATH 2403	ME 3340 Fluid Mechanics 3-0-3 ME 2202, ME 3322*	ECE 3741 Instrument & Electronics Lab 0-3-1 ECE 3710	ECE 3025 Electro- magnetics 3-0-3 ECE 3710, MATH 2403	Social Science Elective 3-0-3	= 16 hrs
	Spring	NRE 3112 Radiation Detection (See Note 6, No W's) 2-3-3 NRE 2110, NRE 3301	NRE 3316 Radiation Protection Engineering 3-0-3 NRE 3301, MATH 2403	COE 3001 Mechanics of Materials 3-0-3 COE 2001, MSE 2001*, MATH 2403*	ME 3345 Heat Transfer 3-0-3 ME 3340, MATH 2403	ISYE 3025 Engineering Economics 1-0-1 Economics (ECON 2100, 2105 or 2106)	MATH/ISYE 3770 Statistics (Minimum Grade C) 3-0-3 MATH 2401	= 16 hrs
SENIOR	Fall	NRE 4204 Nuclear Reactor Physics 4-0-4 NRE 3301	NRE 4214 Reactor Engineering 3-0-3 ME 3340, ME 3345	NRE 4328 Radiation Sources & Applications 3-0-3 NRE 3301, (NRE 3112 OR NRE 3212)	Technical Elective (See Note 2) X-X-3	Ethics HTS 2084, INTA 2030, PST 3105, PST 3109, PST 3127 or PST 4176 (See Note 1) 3-0-3	= 16 hrs	
	Spring	NRE 4206 Radiation Physics Lab (See Note 6, No W's) 1-3-2 NRE 3212, NRE 4204	NRE 4232 NRE Design (See Note 6, No W's) 1-9-4 NRE 4328, NRE 4204	Technical Elective (See Note 2) X-X-3	Technical Elective (See Note 2) X-X-3	Social Science Or Humanities Elect. (See Note 3) 3-0-3	= 15 hrs	

NOTES:

- PST classes are humanities, HTS & INTA classes are social sciences.
- Technical Electives may be selected from any course offered in the Colleges of Engineering, Science, or Computing at the 3000 or 4000 level excluding Psychology (PSYC) and Applied Physiology (APPH). This course cannot substantially overlap an undergraduate course which you intend to include in your degree petition.
- If Ethics is humanities, social science elective is required for this class. If Ethics is social science, humanities elective is required for this class.
- No credit is awarded for both INTA 1200 and POL 1101.
- No credit is awarded for (ECON 2100 and ECON 2105) or (ECON 2100 and ECON 2106).
- NRE 3112, NRE 4206 and NRE 4232 cannot be dropped without approval from the advisor.

Pre-Reqs and Co-Reqs*

126 Total Hrs

GRADUATION REQUIREMENTS:

- No PASS/FAIL classes allowed.
- Minimum grade of D required for each class except as noted.
- Overall GPA must be greater than 2.0.
- Overall NRE GPA must both be greater than 2.0.
- No more than 3 withdrawals (W's) are allowed in ME or NRE classes except for documented and approved reasons.

Pre/Corequisites for NRE Courses

You must satisfactorily complete the appropriate prerequisites or their equivalents before enrolling in any NRE course. Corequisites may be taken simultaneously.

Course	Prerequisites	Corequisites
NRE 2110	None	
NRE 3112	NRE 2110, NRE 3301	
NRE 3212	MATH 2401, PHYS 2211	MATH 2403, PHYS 2213
NRE 3301	PHYS 2213	
NRE 3316	NRE 3301, MATH 2403	
NRE 4204	NRE 3301	
NRE 4206	NRE 3212, NRE 4204	
NRE 4214	ME 3340, ME 3345	
NRE 4232	NRE 4328, NRE 4204	
NRE 4234	NRE 4204	
NRE 4266	NRE 4204, NRE 4214	
NRE 4328	NRE 3301, (NRE 3112 or NRE 3212)	
NRE 4404	NRE 3316	
NRE 4430	NRE 3316	
NRE 4610	Senior standing in science or engineering	
NRE 4750	NRE 3312, NRE 4204	
NRE 4801-2-3	Consent of the School	
NRE 4903	Consent of the School	

COURSES

All courses in Mechanical Engineering and Nuclear and Radiological Engineering are described in the *Georgia Tech General Catalog* at

www.catalog.gatech.edu/programs/coe/mechanical.php#memajor
and

www.catalog.gatech.edu/programs/coe/mechanical.php#nremajor

In addition, go to

www.me.gatech.edu/me/academics

to view the courses and syllabi.

Graduation and Curricula Requirements

To receive a bachelor's degree from Georgia Tech, you must satisfy the following requirements.

Overall GPA

Your cumulative grade point average (GPA) must be at least 2.0.

ME/NRE GPA

Your ME/NRE grade point average (GPA) must be at least 2.0. If classes are repeated, the most recent grade will be used to calculate the ME/NRE GPA.

Grade Requirements

All classes used to graduate with a B.S.M.E. or B.S.N.R.E. must be passed with a grade of D or better. If a student received an F, the class must be repeated. The following classes are exceptions to this rule:

- MATH 1501, MATH 1502, MATH 1522 (Transfer Students only), MATH 2401 and MATH 2403 must be passed with a grade of C or better. If you make a D or F, the class must be repeated.
- All NRE students must pass MATH/ISYE 1770 with a grade of C or better. If you make a grade of D or an F, the class must be repeated.

Repeating Classes

Classes that are taken at Georgia cannot be taken at another school. No credit will be awarded if the class is repeated at another school.

Pass/Fail

All classes used for the B.S.M.E. or B.S.N.R.E. degree must be taken as a letter grade. No pass/fail classes are allowed to be used for graduation.

Electives

Depending on your selected program of study, electives are required. These electives may include Free Electives, ME Electives, and Technical Electives. None of these electives can substantially overlap another course which you intend to use toward your B.S.M.E. or B.S.N.R.E. In addition, these electives have the following requirements:

- **Technical Electives** – Technical Electives may be selected from any course offered in the Colleges of Engineering, Science, or Computing at the 3000 or 4000 level, excluding Psychology (PSYC) and Applied Physiology (APPH) classes.
- **ME Electives** – ME electives may be any ME classes at the 3000 level or higher, not including ME 3720.
- **Free Electives** – Free electives may be any class at the 2000 level or higher.

Social Science and Humanities Requirements

Each student must complete 12 hours of social science credits and 12 hours of humanities credits for graduation. This includes the following:

Humanities Requirements (12 hours total)	Social Science Requirements (12 hours total)
ENGL 1101 (3 hrs)	History ¹ (3 hrs) – Select one: HIST 2111 HIST 2112 INTA 1200 POL 1101 PUBP 3000
ENGL 1102 (3 hrs)	Economics ² (3 hrs) – Select one: ECON 2100 ECON 2105 ECON 2106
Humanities Elective ^{3,4} (3 hrs)	Social Science Elective ^{3,4} (3 hrs)
Humanities Elective ^{3,4} (3 hrs)	Social Science Elective ^{3,4} (3 hrs)

Notes

¹If you select POL 1101 or INTA 1200 for your history requirement, the other course may not be taken as a Social Science Elective. No credit is given for both POL 1101 and INTA 1200 since the courses have duplicate material.

²If you select ECON 2100 as your Economics Elective, you may not take either ECON 2105 or ECON 2106 as your Social Science Elective. However, if you select either ECON 2105 or ECON 2106 as your Economics Elective, then you may choose whichever course you didn't take (ECON 2105 or ECON 2106) as your Social Science Elective.

³Approved social science and humanities electives can be found at www.registrar.gatech.edu.

⁴One Social Science or Humanities elective must be an ethics class. Ethics must be selected from the following:

HTS 2084 (Social Science)
INTA 2030 (Social Science)
PST 3105 (Humanities)
PST 3109 (Humanities)
PST 3127 (Humanities)
PST 4176 (Humanities)

Class Withdrawals

Woodruff School students will not be permitted to drop more than three ME or NRE required courses except for documented, nonacademic reasons. There is a restricted withdrawal policy for several Woodruff School courses. These are usually laboratory or other courses that require special

departmental resources. Other courses with limited enrollments might be added to this list, and they will be so designated during registration. The courses are:

ME/CEE/AE 1770	Introduction to Engineering Graphics and Visualization
ME 2110	Creative Decisions and Design
ME 3057	Experimental Methodology Laboratory
ME 4053	Mechanical Engineering Systems Laboratory
ME 4182	Capstone Design
NRE 3112	Nuclear Radiation Detection
NRE 4206	Radiation Physics Lab
NRE 4232	Nuclear Radiological Engineering Design

A withdrawal from one of the courses will be granted only in the event of serious illness or comparable circumstance beyond the student's control.

Regents' Test

Each student in the University System of Georgia must demonstrate proficiency in reading and composition in English by passing the Regents' Test. You are eligible to take the test after you have earned ten hours of course credit. **(If you have earned 45 credit hours and have not passed the Regents' Test, remedial English (ENGL 0012 and/or 0015) is automatically scheduled in addition to your regular course work.)** For nonnative speakers of English, alternative tests are available through the Department of Modern Languages (404-894-7327). Freshman English courses also include a unit on the Regents' Test. For further information, view

www.gsu.edu/webfs01/reg/wwwrtp/public_html/passing.htm

Undergraduate Research/Special Problems Courses

Several options are available for a Special Problems Course as shown in the accompanying chart. ME/NRE 4903 is a non-research special problem. ME 4903 is usually a design course and may be combined with ME 4182 to work on a two-semester design problem. ME/NRE 4699 and ME/NRE 2699 are research special problems courses. ME/NRE 4699 is for juniors and seniors and will qualify as a technical elective. ME/NRE 4698 and ME/NRE 2698 are research internships. You will be paid for working on a project and the work will be entered on your transcript.

In all cases, you must find a faculty member to work with. Dr. Sanborn simply administers the courses. He will determine which faculty members are interested in sponsoring a course and will notify interested students. However, the most effective method of finding a willing faculty member is to approach those who work in a field that interests you and let them know that you are interested. All courses are nominally three credit hours and enrollment requires a permit. Once you have found an interested faculty sponsor, obtain the appropriate form from the Office of Student Services, select a title for the project, write a paragraph describing both the work to be performed and the required deliverable at the end of the term, obtain the required signatures and return it to Dr. Sanborn. He will sign the form and issue a registration permit.

Each special problem must culminate in a written final report, which is to be submitted to the faculty advisor for grading and forwarded to the Office of Student Services at the end of the semester. No grade will be assigned until the final report has been reviewed and approved by Dr. Sanborn. All special problems taken for credit are given a letter grade.

For more information on undergraduate research, see

www.undergradresearch.gatech.edu/
 or
www.me.gatech.edu/me/academics.

Undergraduate Research Courses								
Course Number	Standard Credit Hours ⁽¹⁾	Hours Count for Degree per Institute?	Hours Count for Degree per ME?	Used As	For Pay?	Grading	New Description	Eligible
ME 4903 NRE 4903	3	Yes	Yes	Technical Elective	No	A - F	Non-Research Special Problem ⁽⁴⁾	Juniors, Seniors
ME 4699 NRE 4699	3	Yes	Yes	Technical Elective	No	A - F	Research Special Problem ⁽⁴⁾	Juniors, Seniors
ME 2699 NRE 2699	3	Yes	No ⁽³⁾	Free Elective	No	A - F	Research Special Problem ⁽⁴⁾	Freshmen, Sophomores
ME 4698 NRE 4698	3	No	No	Transcript Entry Only	Yes	P/F	Undergraduate Research – Pay ⁽⁵⁾	Juniors, Seniors
ME 2698 NRE 2698	3	No	No	Transcript Entry Only	Yes	P/F	Undergraduate Research – Pay ⁽⁵⁾	Freshmen, Sophomores

Notes:

1. The new courses are not strictly limited to 3 credit hours.
2. Three credit hours would typically require 9 research hours work per week (14 during the summer term)
3. ME and NRE currently do not have free electives.
Requires a written statement of work and deliverables. Must be signed by student and advisor to obtain a registration permit.
4. permit.
5. Requires completion of a form detailing hours to be worked and pay rate. Must be signed by student and advisor to obtain a registration permit.
6. A student can receive a maximum of 4 hours of technical elective credit for ME/NRE 4699.

RULES AND REGULATIONS

Academic Classification

The classification for students and the required GPA for good standing are as follows:

<u>Classification</u>	<u>Credit Hours</u>	<u>Minimum GPA for Good Standing</u>
Freshman	0-29	1.70
Sophomore	30-59	1.80
Junior	60-69	1.95
Senior	90+	2.00

Academic Standing

The assignment of academic standing is based on both the student's most recent term and the overall grade point average.

Good Standing

Good academic standing students not on academic probation are in good academic standing. The minimum requirements for good standing are in the table.

Academic Warning

Academic warning is a subcategory of good academic standing, differing only in the maximum allowable schedule load. A student who has an overall academic average below the minimum satisfactory scholarship requirement, or whose academic average for work taken during any term is below this requirement, shall be placed on academic warning.

Academic Probation

A student on academic warning whose academic average is below the minimum satisfactory scholarship requirement for any term shall be placed on academic probation. Also, an undergraduate student in good academic standing whose academic average for any term is 1.00 or below, based on at least six credit hours, shall be placed on academic probation.

Academic Dismissal

The Institute may drop from the rolls at any time a student whose record in scholarship is unsatisfactory. A student on academic probation whose scholastic average for the term of probation is below the minimum satisfactory scholarship requirement and whose overall academic average is below the minimum satisfactory scholarship requirement shall be dropped from the rolls for unsatisfactory scholarship. Also, an undergraduate student on academic warning whose academic average for any term is 1.00 or below, based on at least six credit hours, shall be dropped from the rolls for unsatisfactory scholarship.

Academic Review

A student who normally would be dropped from the rolls for academic deficiencies but appears from the record not to have completed the term may be placed on academic review. This is a temporary standing that makes the student ineligible for registration. If no acceptable explanation is given within a reasonable time, the standing is changed to drop.

Academic Load

The maximum academic loads are listed in the table. However, course loads of more than 18 hours are not advisable except for exceptionally talented students.

Academic Status	Maximum Load (Credit Hours)	Maximum Load (Credit Hours)
	Fall & Spring	Summer
Good	21	16
Warning	16	14
Probation	14	12
Dismissal	N/A	N/A

Change of Major

Undergraduate students, by filing the required form, will be permitted one unrestricted transfer between majors (including undecided) until they have accumulated credit for 60 hours. After 60 hours, upon subsequent request for transfer, the transfer will be permitted at the discretion of the school that the student is seeking to enter. Transfer students are not eligible for the one unrestricted change of major.

To change from ME or NRE to another major, check with the other school or department for their requirements. The requirements to transfer into ME or NRE after the unrestricted transfer are:

- Overall GPA must be 2.6 or greater
- No D's or F's are allowed in MATH, CHEM or PHYS classes.

For a student to change their major, a **Change of Major** form must be filled out. The form must be signed by the new major, signed by the old major, and finally turned into the Registrar's Office in the Tech Tower.

Dropped for Unsatisfactory Scholarship

If you have been dropped for unsatisfactory scholarship you will not normally be readmitted. However, if you seek readmission, you must petition the Institute Undergraduate Curriculum Committee. If you are readmitted into the Woodruff School you must demonstrate the potential for greatly improved academic performance. You will be required to sit out between 1-3 semesters, depending on your academic status at the time of drop. The summer term qualifies as a semester off. An academic review with the Undergraduate Academic Advisor is required before you can seek readmission.

If readmission is recommended, you will be required to sign a contract which will include a program of study and a requirement for a minimum term GPA for each term covered by the contract. Contracts typically run for two or three semesters and require that your overall GPA is a 2.0 or greater at the end of the contract. Each term students must enroll in the courses specified in the contract. If a course cannot be scheduled, an amended contract must be signed and approved. Courses may not be dropped without the approval of the academic advisor.

Failure to meet any part of the contract will result in your dismissal from the Institute with the understanding that no attempt will be made to seek further readmission to the Woodruff School of

Mechanical Engineering. Section VIII, B.6 of the Student Rules and Regulations states: "A student who is dropped a second time for unsatisfactory scholarship will not be readmitted to the Institute."

Exam Policy

The Woodruff School adheres to the guidelines on quizzes and final exams set by the Academic Senate of the Institute as follows:

- Students should receive some performance evaluation before the published drop deadline.
- Quizzes are not to be given during the week preceding final examination. All quizzes are to be graded and returned on or before the last day of class preceding final exam week.
- Each regularly scheduled lecture course shall have a final exam, and it shall be administered at the time specified in the official final exam schedule as distributed by the Registrar.
- A request for a change in the final exam period for an individual student will not ordinarily be granted. The request must be justified in writing and submitted to the instructor at least a week before the scheduled exam period.
- A request for a change in the final exam period for a class must have the approval of the instructor and unanimous approval of the class as determined by secret ballot. The request must be submitted to the Associate Chair for Undergraduate Studies for his approval at least a week before the beginning of final exams.
- In the event a student has two examinations scheduled for the same period, it is the obligation of the instructor of the lower numbered course to resolve the conflict by giving a final exam to that student at a mutually satisfactory alternate time.
- In the event a student is scheduled to take three exams in the same day, it is the obligation of the instructor of the class scheduled for the middle exam period to give a final exam to that student at a mutually satisfactory alternate time.

Graduate Course Option

If you complete both the bachelor's and master's degrees in Mechanical Engineering or Nuclear and Radiological Engineering at Georgia Tech, with the approval of the Woodruff School, you may use up to six credit hours of graduate-level course work for both degrees. To qualify for this option, you must complete your undergraduate degree with a cumulative grade point average of 3.5 or higher and complete the master's degree within a two-year period from the award date of your bachelor's degree. Thus, if you wish to pursue an M.S. degree, you can use graduate courses to fulfill the six hours of ME/NRE electives or technical elective requirements.

Incompletes

If you receive an incomplete (I) in a course, you must satisfactorily complete the course work and arrange for the incomplete to be removed from your record by the end of the next semester for which you are registered within a maximum time frame of one year. Otherwise, the grade will automatically be changed to an F. Clear the incomplete with your original professor. **Do not register again for the course.** Incompletes are only given for nonacademic reasons.

Petitions to the Faculty

You may ask for relief from any of the Institute's rules and regulations by petitioning the Institute's Undergraduate Curriculum Committee. The **Petition to the Faculty** is available in the Office of Student Services. Complete the form, obtain the recommendation and signature of the

The image shows a pink petition form titled "PETITION TO THE FACULTY". It contains several sections for filling out information, including student details, course information, and a section for faculty recommendations and signatures. The form is designed to be used by students seeking relief from Institute rules and regulations.

Undergraduate Academic Advisor and submit the petition to the Registrar. **Do not expect the faculty to protect you from the consequences of your own carelessness.**

Readmissions

We suggest that you consult with the academic advisor before you begin the readmission process. If, for any reason, you have remained out of school more than two semesters (including the summer), you must apply for readmission. A **completed Application for Readmission must be submitted to the Office of the Registrar (located in the Tech Tower) prior to the deadlines listed in the *General Catalog* or on the Academic Calendar.** It is your responsibility to allow sufficient time for the readmission process to be completed. Please note that the Woodruff School can only **recommend** a course of action; the final decision is made by the Institute's Undergraduate Curriculum Committee.

Repeating Courses

Courses that are passed with a grade of C or better normally may **not** be repeated. Consult with the academic advisor if you are considering retaking a non-math course in which you received a grade of D. Except for math, a grade of D or better is considered passing.

Ten-Year Rule

Courses completed more than ten years prior to your graduation must be validated by either a special examination or an approved petition to the faculty.

Thirty-Six-Hour Rule

The final 36 hours earned for a degree must be taken in residence at Georgia Tech.

Transfer Credit

Course work taken at another institution may be considered for transfer credit if it was passed with a grade of C or better, and it is not a substitute for a course previously taken at Georgia Tech. Transfer credit is granted by one of two means.

For most lower division courses the Admissions Office or the Office of the Registrar will review a transcript and automatically give credit, based on a table of equivalency, for courses taken at other institutions. See

www.registrar.gatech.edu/students/transfercredit.php

Otherwise, you must present evidence to the appropriate department at Georgia Tech that the nonresident course is equivalent to a course here. Bring all relevant materials (syllabus, textbook, catalog description, copies of exams, homework, etc.) to the department at Georgia Tech offering the course, and ask that a **Non-Resident Credit** form be completed and submitted to the Registrar. You should check at a later date to make sure the form reached the Registrar.

For ME and NRE students seeking transfer credit for courses in these disciplines, **Transfer Credit** forms can be at:

www.me.gatech.edu/me/academics/undergraduate/advise/images/TransferCreditForm.pdf

Please complete the form and leave copies (not originals) of the requested information as it will **not** be returned. Take materials and the completed form to the Office of Student Services. You will be notified of the outcome of your request by an e-mail from Dr. David Sanborn, Associate Chair for Undergraduate Studies.

Transfer credit appears as the initial entry on a transcript. Where credit is granted for a course that has content identical to a Georgia Tech course, the Georgia Tech course number will be listed. If the credit is for a course that does not exactly match a Georgia Tech course in content or hours, the listing will be in a generic form, such as Math 3xxx.

Voluntary Withdrawal With All W Grades

If you drop all classes during a semester and receive all **W** grades, you must petition the faculty to be readmitted the following semester. The petition must include the reason for your withdrawal.

Withdrawal From a Course

You may withdraw from a course on-line without penalty any time before fifty percent of the term has been completed, as specified by the official calendar. The exact date of the last day that withdrawals can be accepted is published online at

<http://www.registrar.gatech.edu/students/calendar/>

Woodruff School students will not be permitted to drop more than three ME or NRE required courses except for documented, nonacademic reasons.

Dropping a course is a very serious decision. Numerous W's on a transcript are an indication of either poor planning, ineffective time management and/or study skills, or lack of ability to complete assigned tasks. Prospective employers and graduate schools will not look favorably upon a record with a pattern of frequent withdrawals. As a practical matter, withdrawal from a course can jeopardize your ability to complete the degree program as scheduled.

GRADUATION

Degree Petitions

To graduate, you must petition for a degree and pay a \$25 diploma fee to the Cashier's Office in Lyman Hall. **You can obtain the Degree Petition in the Office of Student Services.** This petition must be completed the semester preceding the semester of your graduation and be turned into the Office of Student Services (MRDC 3112) by drop day.



If you **do not** graduate in the semester for which you petitioned, you will need to reactivate your petition when you are ready to graduate. Reactivated petitions require an additional \$25 diploma fee. The petition may be submitted to the Office of Student Services for review and forwarded to the Registrar's Office no later than the end of the first week of classes of your final semester.

For additional information about degree petitions and graduation, see

www.me.gatech.edu/me/academics/undergraduate/advise/

Graduation with Academic Distinction

For graduation with highest honors, the minimum scholastic average is 3.55, for graduation with high honor, the minimum scholastic average is 3.35, and for graduation with honor, the minimum scholastic average is 3.15. Please refer to the *Georgia Tech General Catalog* for additional requirements.

Curriculum Advising and Program Planning (CAPP)

CAPP stands for Curriculum Advising and Program Planning. The Registrar's Office uses this report to verify that all requirements have been met for graduation. The CAPP report will tell you how far along you are in the curriculum and will identify the required classes that you are missing. To look at your CAPP report, go to OSCAR.

SCHOLARSHIPS AND FINANCIAL AID

Woodruff School Scholarships and Awards

The Woodruff School has a number of designated scholarships and awards for mechanical engineering students who excel in scholarship, leadership, and service to the School. Because of its strong ties with industry, government, and foundations, the Woodruff School attracts an unusual number of scholarship opportunities. The School makes every attempt to nominate its exceptional students by matching their qualifications as closely as possible to the spirit and requirements of each award. **To provide the School with information about your background, goals, honors, and personal interests, particularly if interested in being considered for a scholarship or award, you should submit a résumé to the Office of Student Services.** These résumés should be updated periodically. In addition to the résumé, the Undergraduate Academic Advisor may also request an interview with scholarship candidates.

Awards are announced at the Institute's Student Honors Day held in the spring semester. The winners are chosen by the Associate Chair for Undergraduate Studies and the Undergraduate Academic Advisor with approval by the School Chair. These awards, which often include a monetary award, are:

- Pi Tau Sigma Outstanding Senior Award for outstanding scholarship achievement and service to the School, the Institute, and to student activities.
- Pi Tau Sigma Outstanding Junior Award for demonstrating outstanding scholarship and service to the School and student activities.
- Pi Tau Sigma Outstanding Sophomore Award given for demonstrating outstanding scholarship service to the School and to student activities.
- Richard K. Whitehead Jr. Memorial Award, which is given to outstanding mechanical engineering seniors who exemplify high standards of scholarship and service.
- Samuel P. Eschenbach (class of 1933) Memorial Award in Mechanical Engineering is based on academic performance, leadership capabilities in the campus community, and promise as a mechanical engineer.
- Woodruff School Chair's Award is given for outstanding scholarship and contributions to the School, especially to its program by a graduating senior.
- Woodruff School Outstanding Scholar Award, which recognizes a graduating senior who has achieved an exceptional scholastic record in the mechanical engineering program.

Nuclear and Radiological Engineering Scholarships

Unique scholarship opportunities exist for Georgia Tech NRE students. In addition to national NRE scholarships sponsored by the National Academy for Nuclear Training, the U. S. Department of Energy, and some professional societies, Georgia Tech offers scholarships sponsored by local industry, as well as the prestigious George W. Woodruff NRE Scholarship.

Academic Common Market (ACM)

The ACM provides an exciting opportunity for students from the southeast whose state universities do not offer a B.S.N.R.E. degree. Students from those states who are accepted to the NRE program at Georgia Tech pay (Georgia) in-state tuition and must maintain ACM status. For more information, view

www.me.gatech.edu/me/publicat/flyers/BSNRE-ACM.html

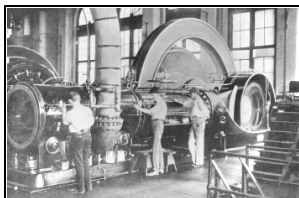
Financial Aid Sources

If you need to take out a loan, U. S. (Stafford) and State Government loans are available to American citizens and permanent residents only; they require advance planning. For more information contact the Office of Student Financial Planning and Services at (404) 894-4160. The Office is located on the 3rd floor of the Student Success Center, located next to the Tech Tower and adjoining the football stadium. The hours are Monday through Friday from 8 a.m. to 4:30 p.m. See also

www.finaid.gatech.edu

SPECIAL PROGRAMS

The Cooperative Program



Since 1912, Georgia Tech has offered a five-year cooperative program to those students who wish to combine career-related experience with classroom studies. The program is the fourth oldest of its kind in the world and the largest optional co-op program in the country. The program alternates between industrial assignments and classroom studies on a semester basis for two of the four years. If you participate in the cooperative program, you will receive the degree Bachelor of Science in Mechanical Engineering or Nuclear and Radiological Engineering, Cooperative Plan. You will then have completed the same course work as that completed by regular four-year students. For more information or to apply for admission to the cooperative program contact the Cooperative Division Office in the Savant Building at (404) 894-3320 or view

www.coop.gatech.edu

The International Cooperative Program

By completing work assignments in a foreign country and exhibiting proficiency in a foreign language, you may earn the "International Cooperative Plan" designation on your degree. This is a great opportunity to utilize your foreign language skills, gain a global perspective, and experience a diverse culture. For more information on this program, please view



www.profpractice.gatech.edu

The Undergraduate Professional Internship Program

In fall 2002, the Undergraduate Professional Internships (UPI) Program was established at Georgia Tech. The first students participated in the program in spring semester 2003. This program is geared toward those students who could not or did not participate in the cooperative program, but want some career-related experience before graduation. The program is open to all majors at Georgia Tech, and is aimed mainly at rising juniors and seniors. For more information and application instructions, view

www.profpractice.gatech.edu/students/upi.html

The Five-Year BS/MS Program

The Woodruff School offers a five-year BS/MS Program for outstanding Woodruff School students who want to obtain a graduate degree in ME, NRE, or BIOE. To learn more about this individualized program, view

www.me.gatech.edu/publicat/brochures/bsms.htm

To be eligible for the program you should have completed 30 semester credit hours at Georgia Tech, which is typically at the end of your freshman year; shown appropriate progress in your degree program; and obtained a grade point average of 3.5 or higher. You must apply to the program before you complete 75 semester



credit hours, including transfer and advanced placement credits. You will need to submit a one-page application form and a short biographical statement. There is no need to take the Graduate Record Exam (GRE) for admission to the program.

While you are an undergraduate student, you can use six hours of ME electives or technical electives toward both your B.S. and M.S. degrees. A maximum of six additional hours taken at the bachelor's level, but not counted toward your B.S. degree, may be used toward your master's degree. BS/MS students must complete the requirements for the bachelor's degree, be awarded the bachelor's degree, and then continue with the master's degree program. Upon receipt of the BS degree your status will be updated to Graduate Student level. Only coursework taken with Graduate Standing counts toward your graduate GPA. You cannot receive both the BS and the MS degrees at the same time.

Studying Abroad

Woodruff School students participate in a number of study-abroad programs. These programs usually offer courses taught by Georgia Tech faculty. In 1997, the Institute began managing reciprocal exchange programs that allow students to attend foreign universities for a portion of their academic program. For more information about these opportunities, see



www.oie.gatech.edu

or

www.me.gatech.edu/me/gtl/GTL.html

or

www.ece.gatech.edu/academic/oxford

A Second Undergraduate Degree

The second undergraduate degree option is available for those who have received an undergraduate degree in another discipline at Georgia Tech or from some other school. To earn a B.S.M.E. or B.S.N.R.E. degree, you must satisfy all the requirements of either the Mechanical Engineering or the Nuclear and Radiological Engineering program including a minimum of 36 semester hours in excess of the requirements for the first degree.

Certificate Program and Minor in Nuclear and Radiological Engineering

The Nuclear and Radiological Engineering/Medical Physics Program in the Woodruff School offers a certificate and a minor in Nuclear and Radiological Engineering to non-NRE engineering students. The requirements for both programs include the following courses:

NRE 3301	Radiation Physics (3-0-3)
NRE 3212	Fundamentals of Nuclear Engineering 3 (3-0-3)
NRE 3316	Radiation Protection Engineering 3 (3-0-3)

Additional courses are required from the list below for a total of at least 12 credit hours for the Certificate Program and 18 credit hours for the Minor Program.

NRE 2110	Introduction to Nuclear and Radiological Engineering 2 (2-0-2)
NRE 4204	Nuclear Reactor Physics 4 (4-0-4)
NRE 4206	Radiation Physics Laboratory 2 (1-3-2)
NRE 4214	Reactor Engineering 3 (3-0-3)

NRE 4232	Nuclear Radiological Engineering Design 4 (1-9-4)
NRE 4234	Nuclear Criticality Safety Engineering 3 (2-3-3)
NRE 4266	Light Water Reactor Technology 3 (3-0-3)
NRE 4328	Radiation Sources and Applications 3 (3-0-3)
NRE/MP 4775	Radiation Imaging 3 (3-0-3)
NRE 4404	Radiological Assessment and Waste Management 3 (3-0-3)
NRE 4610	Introduction to Plasma Physics and Fusion Engineering 3 (3-0-3)
NRE 4770	Nuclear Chemical Engineering 3 (3-0-3) (Crosslisted with ChE 4770)

Other Learning Opportunities in NRE

Undergraduate research with NRE faculty mentors typically begins in the junior year. NRE suggests that students begin with undergraduate research for course credit by finding a faculty research mentor and signing up for NRE 4901, Special Problems in NRE. The following semester the successful student should apply to the President's Undergraduate Research Awards

www.undergradresearch.gatech.edu

(up to \$1,500 for student salary, up to \$1,000 for student travel to professional meetings) or NRE's new Undergraduate Research Scholar's Program (up to \$1,000 for student salary). The NRE program requires a GPA of 3.3 or higher to apply. Applications for the NRE program are available from Dr. Nolan Hertel. Other opportunities for paid undergraduate research opportunities can be found at

www.undergradresearch.gatech.edu/institute-wide.htm

Successful seniors who plan to continue research can apply to the faculty research mentor for continued salary support.

Nuclear and Radiological Engineering (NRE) encourages undergraduates to pursue out-of-class experiences to further their professional development. The department has arranged for hands-on experience in nuclear and radiological engineering to be acquired through a coop assignment, internship, or undergraduate research experience. The Office of Professional Practice offers long-term, alternating full-time work experience for NRE majors through their coop program and short, one semester professional work experience through their Professional Internship Program.

The Frank K. Webb Program in Professional Communication

The Frank K. Webb Professional Communication Program provides classroom instruction, evaluation guidelines, and models of good performances for students who are learning how to prepare written and oral technical reports. Dr. Jeffrey Donnell participates in the Woodruff School's design and laboratory courses; he explains how technical reports work and he grades many written and oral performances. Among his classroom activities at the Woodruff School are:

- Lectures on report preparation for undergraduate design and laboratory courses;
- Prepares instructional guides and example reports; and
- Evaluates and provides feedback on written and oral reports.



As you prepare to graduate from Georgia Tech, Dr. Donnell will help you to develop career-related documents:

- Lectures on the graduate application process and model application essays ;
- Provides model graduate fellowships application essays;
- Reviews student application essays ;
- Reviews student résumés and cover letters; and
- Reviews other class performances and reports, as well as reports prepared for independent research projects.

Study Programs

Woodruff School students serve as tutors for many required courses in mechanical engineering as part of our Academic Study Program. An area in the MRDC Building on the 2nd floor (near the elevator) is reserved for this program. For a list of specific courses and details about times and availability of tutors, see the Advisement page at:

www.me.gatech.edu/me/academics/undergraduate/advise/

There are a number of other study programs at the Institute. For details about these programs, view

<http://www.undergradstudies.gatech.edu/Tutoring.htm>

Fundamentals of Engineering Exam

The Georgia State Board of Registration offers Georgia Tech students the opportunity to take the Fundamentals of Engineering (FE) exam before they graduate, a privilege not normally afforded to the general public. You are encouraged to take this exam in your senior year. Check Woodruff School bulletin boards and e-mail messages for information and instructions on this test. The exam is given twice a year, usually in April and October. Students who are within two semesters of graduation and want to take the exam must fill out the application before the deadlines established by the Georgia State Board. The application, available online some time before the exam at

www.ncees.org

must contain a recent picture of the applicant, be typed, notarized (Norma Frank is a Notary Public), and signed by five references, three of whom must be registered Professional Engineers. The three P. E. signatures will be obtained for you by the Woodruff School.

The application consists of two parts. The first part is sent to the Georgia Secretary of State's Office and costs \$20. The first part of the application should be turned in to Norma Frank in the Office of Student Services. The second portion of the exam can be completed online. Application deadlines are approximately the first week in January for the April test and the last week in June for the October exam.

FACILITIES

We believe the Woodruff School has the finest mechanical engineering facilities in the United States. Most of the Woodruff School is housed in a three-building complex, all built after 1990, with classroom, laboratory, and research space.

The Manufacturing Related Disciplines Complex (MRDC) houses the Administrative Office, the Finance Office, and the Office of Student Services, many undergraduate laboratories, and some classrooms.



The J. Erskine Love Jr. Manufacturing Building houses state-of-the-art research laboratories, classrooms, offices, and study space in the atrium of the building.

The Manufacturing Research Center (MARC) houses a high-bay area with an anechoic (echo-free) chamber and other research equipment and office space.



Our bioengineering faculty are located in the Parker H. Petit Institute for Bioengineering and Bioscience, and the nuclear and radiological engineering faculty are located in the Neely Research Center.



Computers

Shortly after you enter Georgia Tech, the Office of Information Technology (OIT) will create a user ID account and password, usually referred to as a GT account (until recently, this was called a "prism" account), for the campus mainframe computer, a Sun Sparc Center 2000, usually referred to as "acme." These accounts provide a UNIX programming environment, an e-mail account, home page location, and other services. The prism account is the official Georgia Tech e-mail account used for students. You can activate your user account and password in Room 140 of the Rich Building.

Computer Clusters

The Woodruff School maintains three computer clusters for student use. The **General Use Computing Cluster** (MRDC, Room 2104) has 18 PC compatible multimedia computers with zip drives, CD-Writers and 20-inch flat panel monitors, two HP LaserJet 8150 32 ppm, 11 x 17 laser printers, and an HP flatbed scanner with document feeder available for student use. Software installed on the machines include Word, Excel, PowerPoint, Access, Netscape, Matlab, Autocad, Engineering Equation Solver, and Cambridge Materials Selector. Log on information is posted. This cluster is accessible with your buzz card 24/7. Staffed hours are posted outside the door. All Woodruff School students should be programmed for access. If you are not, see the staff in MRDC, Room 2210, (404) 894-6824, or send an e-mail to facilities@me.gatech.edu.

The **Computer Aided Engineering (CAE) Laboratory** (MRDC, Room 2105) houses 27 higher end PC compatible multimedia computers, CD-Writers, and 20 inch flat panel monitors, a Lexmark 11x17 24ppm laser printer, an HP 4550 color laser printer, an HP 4600 color laser printer, and an HP 755CM large format plotter. This cluster is reserved for classes and students using IDEAS,

Fluent, or ANSYS modeling and analysis software. The cluster remains locked 24 hours a day with access via buzz cards only to authorized students. You must be in a class that needs these software packages or have special approval from a faculty member to use the lab. Requests to use the CAE can be made to

www2.me.gatech.edu/caecluster/cae_request.asp

The **Nuclear and Radiological Engineering Computer Cluster** (NNRC/G114) houses PC-compatible computers and printers. Some of the computers in this cluster are available for general use by NRE students. The rest of the computers are reserved for NRE classes requiring nuclear engineering specific codes. Instructions for use of the facility are posted on the door.

Using the School's Computers

Computer facilities are available only to serve needs directly related to class assignments and academic research. **The facilities are not for personal use.** Use of computer resources to prepare personal letters, print résumés, play games, consulting activities, or for other commercial uses is a violation of Institute policy. Anyone caught not doing legitimate work may be asked by a user assistant to relinquish his or her seat in the cluster.

Wireless/Walkup Network (LAWN)

The purpose of the Georgia Tech Wireless/Walkup Network (LAWN) is to connect in common areas of the buildings where there is normally no access. OIT supports the LAWN from 8 a.m. to 5 p.m. Monday through Friday. There are instructions to connect to the LAWN in the lobbies of the Love and MRDC buildings and online. System requirements and instructions also can be found online at

www.me.gatech.edu/support/computer/LAWN/lawnpage.html

For additional assistance with connecting to the wireless or walkup network, please contact the help desk at 404-894-7193, or computer.support@me.gatech.edu, or go to MRDC, Room 2103.

Woodruff School CyberStation

E-mail and web access are available at the Woodruff School Cyber Station, located on the 2nd floor of MRDC. The workstation may be used by Woodruff School students and guests of the School, and accesses Internet-based e-mail, general web browsing, and secure telnet messages. While you can use the Cyber Station as often as you like, it is intended for short-term use. Please be aware of others who are waiting to use the terminal and limit your activity accordingly. For complete instructions, view



www2.me.gatech.edu/kioskhome.htm

Copy and Fax Machines

A copy machine and a FAX machine, both reserved for student use, are located in the second floor lobby of the MRDC Building. The fax number is 404-385-2604.

The Machine Shop

If you have the appropriate skills, you may be allowed to use the Machine Shop (MRDC, Room 2327). Prior, you will be asked to attend a machine shop safety training class or to demonstrate appropriate skills to shop personnel. Fill out a **Machine Shop Student Work Request**. This form contains a **Waiver of Liability**, and must be signed by your advisor and submitted to the machine shop manager prior to using the machines. This form is located online at



www.me.gatech.edu/machine.shop/machine.php

For more information about the student machine shop, contact Mr. John Graham at (404) 894-3216 or at john.graham@me.gatech.edu, or see

www.me.gatech.edu/machine.shop/title_page.html

The Electronics Lab

The Electronics Lab is located in Room 2317 of the MRDC Building. You are not allowed in this lab unless a staff member is present. Work performed in the Electronics Lab must be related to funded research, thesis work, or course work. Contact Mr. Vladimir Bortkevich at (404) 894-7671 or at vladimir.bortkevich@me.gatech.edu to discuss your requirements. For more information, see

www.me.gatech.edu/support/electronics



STUDENT ORGANIZATIONS

There are a number of groups for you to join in the Woodruff School. These organizations offer a unique opportunity to learn about the many facets of mechanical engineering and nuclear and radiological engineering, let you meet practicing professionals, and they provide valuable service to the School. You are strongly encouraged to participate in one or more of these groups. For general information, view

www.me.gatech.edu/me/publicat/flyers/studorgs04.htm

or

www.me.gatech.edu/me/students/organizations

Honor Society

Pi Tau Sigma

Professional Societies

American Nuclear Society

American Society of Heating, Refrigerating, and Air Conditioning Engineers

American Society of Mechanical Engineers

SAE International

Society of Manufacturing Engineers

Student Competition Groups

gt motorsports

GT Off-Road

Robojackets/FIRST

Umbrella Groups

Woodruff School Student Advisory Committee (WSSAC)

Nuclear and Radiological Engineering Student Advisory Group

WOODRUFF SCHOOL FACULTY

Your interaction with faculty, both in and out of the classroom, is an important part of your education. You are strongly encouraged to take advantage of the opportunities to meet with the faculty, just as faculty members are encouraged to include students to the maximum extent possible in research and other learning experiences. You may e-mail any faculty member by using their:

firstname.lastname@me.gatech.edu

or

firstname.lastname@nre.gatech.edu

for NRE faculty only.

View the individual faculty web pages at

www.me.gatech.edu/me/people/academic.faculty/

MECHANICAL ENGINEERING

Acoustics and Dynamics

Yves H. Berthelot, Professor

Acoustics, laser instrumentation in acoustics, ultrasonics

LOVE 124
404-894-7482

Kenneth A. Cunefare, Associate Professor

Active/passive control, modeling and control of brake squeal, fluid-structure interaction, and optimal acoustic design

LOVE 113
404-894-4726

Aldo A. Ferri, Associate Professor

Acoustics, structural dynamics, nonlinear dynamics and control

LOVE 107
404-894-9032

Jerry H. Ginsberg, George W. Woodruff Chair in Mechanical Systems and Professor of Mechanical Engineering

Vibrations, acoustics, dynamics, and fluid-structure interaction

LOVE 101
404-894-3265

Peter H. Rogers, Rae and Frank Neely Professor in Mechanical Engineering

Underwater acoustics and bioacoustics

LOVE 118
404-894-3235

Automation and Mechatronics

Wayne J. Book, HUSCO/Ramirez Distinguished Chair in Fluid Power and Motion Control and Professor of Mechanical Engineering
Robotics, automation, modeling fluid power, and motion control

LOVE 202
404-894-3247

Ye-Hwa Chen, Professor

Controls, manufacturing systems, neural networks, fuzzy engineering

MARC 440
404-894-3210

Kok-Meng Lee, Professor

System dynamics, control, automation, optomechatronics

MARC 474
404-894-7402

Harvey Lipkin, Associate Professor

Design and analysis of mechanical systems, robotics, and spatial mechanisms

LOVE 214
404-894-7410

John G. Papastavridis , Associate Professor Analytical, structural/nonlinear mechanics, vibrations, and stability	LOVE 132 404-894-2789
Nader Sadegh , Associate Professor Controls, vibrations, and design	MARC 475 404-894-8172
William Singhose , Associate Professor Vibration, flexible dynamics, and command generation	MARC 432 404-385-0668
<u>Bioengineering</u>	
Andrés García , Associate Professor Cellular and tissue engineering, cell adhesion, and biomaterials	IBB 2314 404-894-9384
Rudy Gleason , Assistant Professor Cardiovascular mechanics and modeling mechanobiology	IBB
Robert Guldberg , Associate Professor Biomechanics, microCT imaging and tissue engineering	IBB 2311 404-894-6589
Jens O. M. Karlsson , Associate Professor Thermodynamics and transport in biological systems, nonequilibrium solidification, tissue engineering, and bioMEMS	LOVE 005 404-385-4157
David N. Ku , Lawrence P. Huang Endowed Chair in Engineering and Entrepreneurship and Regents' Professor Thrombosis, biomaterials, and tissue engineering	IBB 2307 404-894-6827
Marc Levenston , Associate Professor Orthopedic biomechanics, soft tissue mechanics, tissue engineering	IBB 2312 404-894-4219
Robert M. Nerem , Parker H. Petit Distinguished Chair for Engineering in Medicine and Institute Professor Biomedical engineering, cellular and tissue engineering	IBB 1106/1305 404-894-2768
Raymond P. Vito , Associate Dean for Academic Affairs and Professor Biomechanics, tissue mechanics, and design	IBB 2305 404-894-2792
Timothy Wick , Professor of Chemical and Biomolecular Engineering (Joint Appointment) Tissue and bioprocess engineering, bio reactor design, cell adhesion, and blood rheology	IBB 1310 404-894-8795
Ajit Yoganathan , The Wallace H. Coulter Distinguished Faculty Chair in Engineering and Regents' Professor (Joint Appointment) Cardiovascular fluid dynamics, rheology, Doppler ultrasound, and MRI	IBB 2303 404-894-2849
Cheng Zhu , Professor of Biomedical Engineering (Joint Appointment) Biomechanics of single cells and single molecules, cell adhesion kinetics, and bio-MEMS	IBB 1308 404-894-3269

Computer-Aided Engineering and Design**Bert Bras**, ProfessorEnvironmentally conscious design, design for recycling,
and robust designMARC 253
404-894-9667**Farrokh Mistree**, Professor and Associate Chair of the Woodruff

School for the GT Savannah Campus

Strategic design, design of product families and distributed
design and manufactureMARC 262
404-894-8412**Chris Paredis**, Assistant ProfessorSimulation-based design, information technology for design,
mechatronics, and evolutionary algorithmsMARC 256
404-894-5613**David W. Rosen**, Professor

Virtual and rapid prototyping, intelligent CAD/CAM/CAE

MARC 252
404-894-9668**Suresh K. Sitaraman**, ProfessorCAD/CAE, electronic packaging, thermomechanics and
reliability, and FEMMARC 471
404-894-3405**Fluid Mechanics****Cyrus Aidun**, ProfessorHydrodynamic stability, liquid coating, and suspended
particle hydrodynamicsIPST 313
404-894-6645**Ari Glezer**, George W. Woodruff Chair in Thermal Systems
and Professor of Mechanical Engineering

Fluid mechanics, turbulent shear flows, flow control, diagnostics

LOVE 239
404-894-3266**G. Paul Neitzel**, ProfessorHydrodynamic stability, surface-tension-driven and rotating flows,
noncoalescence, and nonwetting and bioreactor fluid dynamicsLOVE 229
404-894-3242**David Parekh**, Deputy Director of GTRI and
Associate Vice Provost for Research (Joint Appointment)

Active flow control, propulsion, and fuel cell systems

GTRI-COBB COUNTY
770-528-7826**Marc K. Smith**, Professor

Hydrodynamic stability, liquid films, droplet atomization

LOVE 237
404-894-3826**Fotos Sotiropoulos**, Associate Professor of Civil and
Environmental Engineering (Joint Appointment)Computational fluid dynamics, turbulent shear flows,
fluid mixing, biofluid mechanics, and environmental hydraulicsMASON 229
404-894-4432**Minami Yoda**, Associate ProfessorExperimental fluid mechanics, suspension flows, nano- and
microfluids, and optimal diagnosticsLOVE 228
404-894-6838**Heat Transfer, Combustion and Energy Systems****Frederick W. Ahrens**, ProfessorHeat and mass transfer, drying, transport phenomena in porous media,
thermal and energy systems modeling, simulation, and optimization.IPST 321
404-894-6496

J. Narl Davidson , Associate Dean of Engineering and Professor Academic administration, engineering education, plasma physics, and power plant operation	COE 301 404-894-3350
Andrei Fedorov , Associate Professor Catalysis and fuel cells, chemical and electrochemical sensors, atomic force microscopy, and thermal radiation	LOVE 307 404-385-1356
Srinivas Garimella , Associate Professor Sustainable technologies, phase change in microchannel and compact heat exchangers, heat and mass transfer in binary mixtures	LOVE 340 404-894-7479
Mostafa Ghiaasiaan , Professor Multiphase flow, aerosol and particle transport, microscale heat transfer, and nuclear reactor thermohydraulics	LOVE 308 404-894-3746
Sheldon M. Jeter , Associate Professor Thermodynamics, energy systems, and heat transfer	LOVE 330 404-894-3211
Yogendra K. Joshi , John M. McKenney and Warren D. Shiver Distinguished Chair in Building Mechanical Systems and Associate Chair for Graduate Studies Thermo-fluid issues in emerging technologies and microthermal systems	LOVE 338 404-385-2810
David Orloff , Professor Impulse drying, pressing, and web preheating	IPST 315 404-894-6649
Samuel V. Shelton , Associate Professor Energy systems, HVAC systems, absorption, refrigeration	LOVE 216 & Tech Sq. 404-894-3289
William J. Wepfer , Vice Provost for Distance Learning and Professional Education and Professor Heat transfer and thermodynamics	SWANN 404-894-8920
Zhuomin Zhang , Associate Professor Microscale heat transfer, thermophysical properties, and radiation thermometry	LOVE 343 4-3759
Ben Zinn , David S. Lewis Jr. Chair in Aerospace Engineering and Regents' Professor (Joint Appointment) Combustion instability, active control, microscale combustion, propulsion, and acoustics	KNIGHT 365G 404-894-3033
<u>Manufacturing</u>	
Daniel F. Baldwin , Associate Professor Manufacturing systems design, electronics manufacturing and packaging, and polymer processing	MARC 432 404-894-4135
Jonathan S. Colton , Professor Manufacturing, polymer/composites processing, rapid prototyping, and nano/microfabrication	MARC 434 404-894-7407
Steven Danyluk , Morris M. Bryan, Jr. Chair in Mechanical Engineering for Advanced Manufacturing Systems and Professor Semiconductor processing, lubricant-surface interaction, polishing and sensors	MARC 313 404-894-9687

Thomas R. Kurfess, Professor
System dynamics, control, metrology, CAD/CAM/CAE, and
precision system design
MARC 435
404-894-0301

Steven Y. Liang, Morris M. Bryan, Jr. Professorship in Mechanical
Engineering for Advanced Mechanical Systems
Automated manufacturing, controls systems, digital signal processing
MARC 438
404-894-8164

Shreyes N. Melkote, Associate Professor
Machining processes, surfaces, intelligent fixturing, and CAM/CAPP
MARC 437
404-894-8499

Timothy Patterson, Assistant Professor
Web preheating
IPST 385
404-894-4797

I. Charles Ume, Professor
Electronic packaging, mechatronics, laser moiré and laser ultrasonics
MARC 453
404-894-7411

Mechanics of Materials

Mohammed Cherkaoui, Professor
Micro and nanomechanics, multiscale transition methods, crystal
plasticity, behavior of materials with high strength and ductility,
phase transformation, and smart materials
GTL, France
9-011-33-3-87-20-39-36

Ken Gall, Associate Professor of Materials Science and Engineering
(Joint Appointment)
Multiscale experimental and computational mechanics of
materials. emphasizing nanometer scale materials, metallic
and polymer biomaterials, and mechanically active materials
LOVE

Karl Jacob, Associate Professor of Polymer, Textile and Fiber
Engineering (Joint Appointment)
Phase transformation & clustering, nanoscale modeling such as
molecular dynamics and Monte Carlo methods, nanostructured
composites, networked polymers, fracture, and drug delivery systems
MRDC 4509
(404) 894-2541

Laurence J. Jacobs, Professor of Civil Engineering and
Environmental Engineering (Joint Appointment)
Nondestructive evaluation, wave propagation in solids, and
experimental mechanics
MASON 296
404-894-2771

Steve Johnson, Professor of Materials Science and Engineering
(Joint Appointment)
Fatigues, fracture mechanics, and durability of materials and structures
LOVE 166
404-894-3013

Christopher S. Lynch, Associate Chair for Administration
and Professor
Experimental mechanics, smart materials
MRDC 3218 & 4105
404-894-6871

David L. McDowell, Carter N. Paden, Jr. Distinguished Chair in
Metals Processing and Regents' Professor
Material deformation and damage, constitutive laws, and metals processing
MRDC 4105
404-894-5128

Richard W. Neu, Associate Professor
Fatigue, deformation, and degradation of materials
MRDC 4102
404-894-3074

Jianmin Qu , Professor Fracture, composite materials, wave propagation, and microelectronic packaging	MRDC 4108 404-894-5687
Min Zhou , Professor Micro- and nanoscale behavior, continuum and molecular dynamics modeling, experimental/computational mechanics, dynamic behavior and fracture	MRDC 4109 404-894-3294
Ting Zhu , Assistant Professor Deformation and failure of materials at small scales, coupled mechanochemical phenomena in bulk and nanostructures microstructural evolution, and guided self-assembly	MRDC
<u>Microelectromechanical Systems</u>	
F. Levent Degertekin , Associate Professor Micromachined sensors and actuators, ultrasonics, atomic force microscopy, and nondestructive evaluation	LOVE 320 404-385-1357
James Gole , Professor of Physics (Joint Appointment) Nanostructured materials, porous media, sensors, and micro- and nanocatalysis	HOWEY 404-894-4029
Samuel Graham , Assistant Professor Microscale heat transfer, thermophysical properties, nanostructured materials, nanodevices, and device reliability	LOVE 339
Peter J. Hesketh , Professor Microfabrication, micromachining, sensors, actuators, biosensors, and microfluids	LOVE 317 404-385-1358
William R. King , Assistant Professor Micro/nanoscale heat transfer and thermal processing, atomic force microscopy, MEMS and micro/nanofabrication	LOVE, 206 404-385-4224
Wenjing Ye , Assistant Professor CAD design of MEMS, microfabrication and numerical analysis	LOVE 316 404-385-1301
<u>Tribology</u>	
Itzhak Green , Professor Hydrodynamic lubrication, vibrations, rotordynamics, fluid sealing, design, and diagnostics	MRDC 4209 404-894-6779
Richard F. Salant , Georgia Power Distinguished Professor in Mechanical Engineering Fluid mechanics, fluid sealing, lubrication and tribology	MRDC 4205 404-894-3176
Jeffrey L. Streater , Associate Professor Computer-disk tribology, thin-film lubrication, capillarity, and contact mechanics	MRDC 4206 404-894-2742

Ward O. Winer , Eugene C. Gwaltney, Jr. Chair of the Woodruff School and Regents' Professor High-pressure rheology, lubrication, tribology, thermomechanics, mechanical systems diagnostics	MRDC 3214 404-894-3200
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NUCLEAR AND RADIOLOGICAL ENGINEERING/MEDICAL PHYSICS

Said I. Abdel-Khalik , Southern Nuclear Distinguished Professor Reactor engineering and thermal-hydraulics, two-phase flow and heat transfer; and inertial fusion technology	LOVE 324 404-894-3719
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Cassiano R. E. de Oliveira , Professor Numerical radiation transport, computational fluid flow and molecular flow, and numerical modeling	NEELY 104 404-385-4928
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Nolan E. Hertel , Professor Radiation shielding, neutron dosimetry, radiological assessment, radioactive waste management, accelerator sources and applications, and high-energy particle transport	NEELY 113 404-894-3717
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Farzad Rahnema , Associate Chair of the Woodruff School, Chair of the Nuclear and Radiological Engineering/Medical Physics Program, and Professor Reactor physics, perturbation and variational methods, computational transport theory, criticality safety	NEELY 122 404-894-3731
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Weston M. Stacey, Jr. , Fuller E. Callaway Professor in Nuclear Engineering and Regents' Professor Fusion engineering, plasma physics, and reactor physics	NEELY 106 404-894-3714
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C.-K. Chris Wang , Associate Professor Radiation detection and dosimetry, medical and industrial applications of ionizing radiations, and spent nuclear fuel measurements	NEELY 120 404-894-3727
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ACADEMIC PROFESSIONALS

Jeffrey Donnell , Academic Professional and Coordinator of the Frank K. Webb Program in Professional Communication	MRDC 3104 404-894-8568
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Kristi Lewis , Academic Professional and Undergraduate Academic Advisor	MRDC 3108 404-894-3205
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David Sanborn , Senior Academic Professional and Associate Chair for Undergraduate Studies Design, thermodynamics, and combustion	MRDC 3103 404-894-7502
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Michael Stewart , Academic Professional Engineering design graphics, computer-aided design, advanced feature-based parametric solid modeling, and rapid prototyping	MRDC 2212 404-385-1224
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Wayne Whiteman , Director of the Office of Student Services and Senior Academic Professional Vibrations, structural dynamics, nonlinear dynamics, and engineering education	MRDC 3102 404-894-3218
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