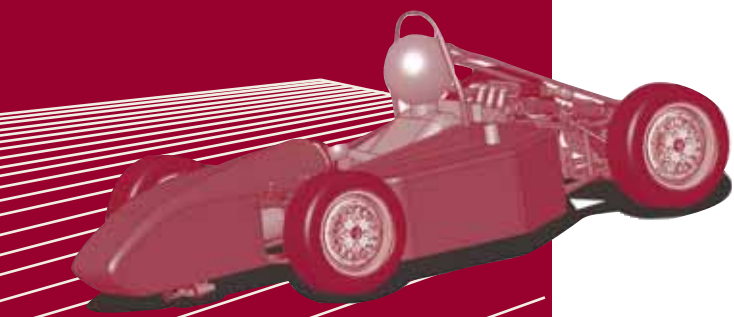
MECHANICAL ENGINEERING

Undergraduate Engineering Program at MSU



JAMES WORTH BAGLEY
COLLEGE OF ENGINEERING
MISSISSIPPI STATE UNIVERSITY
MECHANICAL ENGINEERING

MECHANICAL ENGINEERING

Mechanical engineering is the application of science and mathematics to the design, development, and operation of mechanical and energy systems. Examples of these systems include mechanical devices ranging from simple linkages and gears to complex automated robots and energy systems ranging from water pumps to high-performance jet engines. Since the range of applications is so broad, virtually all industries employ mechanical engineers in various capacities.

Versatility is the hallmark of mechanical engineering, in order to understand how to harness and use energy, mechanical engineers must have expertise in areas as diverse as stress analysis and heat transfer.

In addition to their strong foundation in the sciences, mechanical engineers must develop speaking and writing skills. Mechanical engineers spend much of their time thinking about how to design systems that will use energy efficiently. The design process is complex, but it begins and ends with a mechanical engineer communication with people to determine needs, set priorities, explain functions, and sell ideas.

Carpenter Building, home of the Mechanical Engineering Department

MECHANICAL ENGINEERING AT MSU

The mechanical engineering program at Mississippi State University is challenging and demanding. The average ACT composite score of first-time entering engineering freshmen is approximately 27.5. Students who are interested in mechanical engineering are encouraged to prepare themselves in high school by taking courses in mathematics, physics, chemistry, computer science, and English.

FACULTY

The heart of any engineering program is a qualified and experienced faculty. Besides excellent academic credentials, members of the Mississippi State University mechanical engineering faculty have a wealth of experience at the university level and in industry. Faculty members are dedicated to providing students with a program that will prepare them for jobs or graduate school. Also, the faculty is available to work closely with students on special research projects outside of traditional class work.

Engineering Students at MSU in a classroom setting

CURRICULUM

FRESHMAN YEAR

First Semester
Freshman Seminar
English Composition I
Calculus I
Fundamentals of Chemistry
Investigations in Chemistry
Humanities Elective
Fine Arts Elective

Second Semester
Physics I
English Composition II
Calculus II
Fundamentals of Chemistry
Computer Programming**

SOPHOMORE YEAR

First Semester
Engineering Mechanics I
Modeling & Manufacturing
Physics II
Calculus III
Linear Algebra

Second Semester
Engineering Mechanics II
Thermodynamics I
Physics III
Calculus IV
Differential Equations I

JUNIOR YEAR

First Semester
Technical Writing
Mechanics of Materials
Fluid Mechanics
Engineering Economy
Engineering Analysis
Thermodynamics II

Second Semester
EE Systems
Heat Transfer
Materials for Mech. Eng. Design
Mechanics of Machinery
Experimental Orientation
Social/Behavioral Science Elective

SENIOR YEAR

First Semester
Electronics
System Dynamics
Experimental Techniques I
Machine Design
Mech. Eng. Tech. Elective*
Social/Behavioral Sci. Elective

Second Semester
Energy Systems Design
Mechanical Systems Design
Automation of Mech. Systems
Experimental Techniques II
Mechanical Eng. Technical Elective*
Humanities Elective

TECHNICAL ELECTIVES

Material Selection in Design
Failure of Eng. Materials
Mechanical Metallurgy
Intermediate Heat Transfer
Alternate Energy Sources
Air Conditioning
Heat Exchanger Design
Casting and Joining
Machining and Forming
Failure of Eng. Materials
Lubrication
Engineering Design
Concurrent Engineering
Combustion Engines
Control Systems
Experimental Methods in Mat. Res.
Labview Programming for Data Acq.
Compressible Flow & Turbomach.
Intermediate Fluid Mechanics

The mechanical engineering curriculum focuses on the design and operation of mechanical systems and energy systems. The basic courses prepare the student for the introductory engineering courses in the sophomore and junior years and for the comprehensive design courses in the senior year. Throughout the curriculum there is significant use of the computer to solve realistic engineering problems. The department places strong emphasis on technical communications.

JOB PROSPECTS

The mechanical engineering curriculum at Mississippi State University prepares graduates to enter a variety of fields:

- Aerospace
- Oil and Gas
- Petrochemical
- Utilities
- Manufacturing
- Marine
- Communications
- Computers
- Pulp and Paper
- Consulting

Mississippi State University mechanical engineering graduates are in constant demand by corporate recruiters who come to campus. For many years, mechanical engineering majors have been among the most highly recruited graduates on campus. The average starting salaries for mechanical engineering majors are among the highest for college graduates.

**Proficiency in Visual Basic, C or C++, or Fortran required

*Please reference the Technical Electives section of this brochure for more information.

STUDENT ORGANIZATIONS

Mechanical engineering students have the opportunity to participate in engineering professional societies. Student sections of these societies normally meet twice a month and host individual speakers, sponsor field trips to industries, and plan social functions. The following professional organizations have student sections in mechanical engineering at Mississippi State University:

- American Society of Mechanical Engineers
- Society of Automotive Engineers
- American Foundry Society
- American Society of Heating, Refrigeration & Air Conditioning Engineers
- Pi Tau Sigma (Mechanical Engineering Honorary Society)

American Foundry Society members casting metal

American Society of Mechanical Engineers Cookout

MSU's 2006 Formula SAE car

FINANCIAL AID & SCHOLARSHIPS

Scholarships from several sources are available for mechanical engineering students. Mississippi State provides a wide range of scholarships to academically talented students through the College of Engineering and the Admissions and Scholarships. This department also coordinates the university's work-study program, which allows eligible students to work up to 20 hours a week.

For more information on scholarships contact **Admissions and Scholarships, P.O. Box 6334, Mississippi State, MS 39762-6334. For information about financial aid contact Student Financial Aid, P.O. Box 6035, Mississippi State, MS 39762-6035.** There also are mechanical engineering scholarships available to sophomores, juniors, and seniors on the basis of academic performance.

Mechanical Engineering Students at MS Nissan Plant

Mechanical engineering students have the opportunity to obtain practical experience while getting paid in the Cooperative Education Program. The co-op program allows students to work alternate semesters in an engineering-related position with companies throughout the United States. Students complete the co-op program before their senior year so they can concentrate on the intensive sequence of design courses during the last two semesters. The range of average monthly salaries for mechanical engineering co-op students is $2,100 to $3,900.

For more information on the co-op program, write to the **Cooperative Education Program, P.O. Box 6046, Mississippi State, MS 39762-6046.**

THE UNIVERSITY

Mississippi State University was founded near Starkville in 1878 as a land-grant institution dedicated to serving the people of the state and training its youth. The university has since emerged as one of the region's and nation's premier teaching, research, and service universities, but it has never wavered from its primary mission. Excellence in undergraduate education remains foremost among the priorities of the state's largest university. Today, Mississippi State University has more than 16,200 students on the main campus in Starkville and on campuses in Meridian, Vicksburg, and Bay St. Louis; more than 1000 faculty members; and an alumni family of more than 104,000. The university has excelled in graduating men and women who have gone on to become state and national leaders in business and industry, government, education, engineering, and many other fields. A strong academic program, skilled and talented students, an energized and motivated faculty, and membership in the distinguished Southeastern Conference have created an exceptional educational environment. Fully accredited, Mississippi State University is a highly respected institution of higher learning and is entering the 21st century as one of the educational leaders of the Southeast.

FOR MORE INFORMATION

For more information on the Mississippi State University Mechanical Engineering Program, contact: **Department of Mechanical Engineering; 210 Carpenter Engineering Bldg.; P. O. Box ME; Mississippi State, MS 39762-5925; 662-325-3260, 662-325-7223 (fax); info@me.msstate.edu; www. me.msstate.edu.**

Mississippi State University

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