Mechanical Engineering Program
2008-2009 Degree Plan

For more information contact:

Byron L. Newberry, Ph.D.
Department Chair
(405) 425-5428
byron.newberry@oc.edu
Mechanical engineering (ME) graduates are some of the most sought after in industry because of their flexibility. ME is the broadest of the engineering disciplines in its range of function and activity. Every industry needs ME’s due to their breadth of knowledge. This makes ME’s valuable designers, analysts, and leaders in multidisciplinary projects as they easily bridge the gap between the more specialized disciplines.

“One of the best aspects of the [mechanical engineering] profession is that it is broad enough to accommodate just about any sort of interest.”
- Thomas Perry, Director of the Educ. & Prof. Dev. (American Society of Mech. Engineers)

**PROGRAM DISTINCTIVES & OUTCOMES**

- The OC Mechanical Engineering Program is accredited by the Engineering Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, telephone (410) 347-7700.
- Each year hiring managers seek more students to fill job positions than the number of students graduating.
- Most faculty had heavy industry experience prior to teaching providing students with real world knowledge and career and internship connections.
- Unique Christian Engineering Scholars Program scholarship opportunity (25% tuition merit award freshman year building to 100% senior year). For more information see www.oc.edu/ces.

**PROGRAM STRENGTHS**

- Academic rigor, Christian education
  Program every bit as rigorous as large state programs (alumni would say more) in a Christian environment with faculty members that are dedicated to teaching first.
- Hands-on, active learning
  Program size allows substantial laboratory and design work. You learn by doing.

- Small classes taught by engineers
  Courses taught by engineers with advanced academic experience and practical industry knowledge.
- Christian faculty
  We produce Christian Engineers, not engineers that just happen to be Christians. Engineering talents are a God given gift intended to serve society and improve human condition.

**PROGRAM OBJECTIVES**

- Technical Knowledge
  Solid foundation in technical knowledge and essential engineering methodologies allow you to be trainable and productive in industry settings and graduate school.
- Workplace Skills
  Mastery of essential workplace skills to positively interact with co-workers, community, and society and to advance your career through increasing levels of responsibility.
- Life Skills
  Instill an understanding of the Christian worldview and broad education necessary for lives of leadership and service in the workplace, home, and community.

**ENGINEERING MISSIONS AND SERVICE**

Mechanical engineering students routinely participate in service oriented mission efforts to serve others by applying their technical training. Examples of current activities and projects include:

- Spring break campaign to Honduras (spring 2008)
- Senior project to design and implement a simple, effective water filtration system for use in Africa
- Senior project to design and implement a portable water quality test incubator for use in remote villages of Africa

**FACULTY MEMBERS**

Byron Newberry, Ph.D.
Chair, Mechanical Engineering Department
Associate Professor of Mechanical Engineering
B.S.M.E., Oklahoma Christian University
M.S.M.E., University of Michigan
Ph.D., University of Michigan

David Cassel, Ph.D., P.E.
Professor of Mechanical Engineering
B.S.M.E., Louisiana Tech University
M.S.M.E., Louisiana Tech University
Ph.D., Georgia Institute of Technology
Jim Cutbirth, Ph.D., P.E.
Professor of Mechanical Engineering
B.S.A.E., University of Texas
M.S., University of Texas
Ph.D., Oklahoma State University

Jim Elkins, M.S.M.E., P.E.
Associate Professor of Mechanical Engineering
B.S.M.E., University of Nebraska
M.S.M.E., University of Nebraska
Specialties: Quality in Manufacturing, Lean Manufacturing.

Bill Ryan, Ph.D., P.E.
Professor of Engineering Sciences
B.A., California State University
M.A., Sam Houston State College
Ph.D., University of Texas
Specialties: Acoustics, Mechanical Vibration, Data Acquisition and Instrumentation.

Wayne Whaley, Ph.D., P.E.
Professor of Mechanical Engineering
B.S., Oklahoma State University
M.S., Oklahoma State University
Ph.D., Oklahoma State University
Specialties: Mechanical Vibration, Dynamic Systems and Controls, Instrumentation, Aircraft Structures.

COMPANIES/GRADUATE SCHOOLS

Graduate Schools:
Cornell University
Oklahoma State University
Purdue University
University of Arkansas
University of Michigan
University of Oklahoma
University of Tennessee
University of Texas
Texas A&M

Employers:
Boeing
Lockheed Martin
Tinker AFB
Beam's Industries
Caterpillar
John Deere
Exxon Mobil
Halliburton
Ford
Volvo
Honda
Schlumberger
Gulfstream
Northrop Grumman
Sabolich Prosthetics
Proctor and Gamble
Ditch Witch
Conoco
Shell Oil
OG&E
General Motors
Goodyear
FAA

Oklahoma Christian offered an engineering education that no other school could offer. I valued the one on one attention, small class sizes, and Christian values and overtones. The professors’ focus was on the students and quality of education, not ongoing research which often takes priority at larger universities. The accredited program is top notch and surpasses most engineering institutions in the US. While attending a well-recognized engineering school for graduate work, I found myself truly ahead of the curve both from a technical aspect as well as professional readiness. I attribute this to the OC experience.

-Matthew McKee

I attended a large state university before I came to OC. The professors and the smaller classroom setting at OC was a breath of fresh air when I arrived. It felt odd to me to be in a place where the professors actually cared if the students understood the material and their doors were always open to answer any questions. Looking back, all the OC professors had real world job experience; this made the curriculum and teaching more interesting and useful to me when I too entered the real world.

-Tim Wrinkle, Class of 2003

Recent Graduates
Brady Shumate (Cessna, ’07)
James Baird (Cessna, ’06)
Charles Gregg (Grad Student, University of Tennessee, ’06)
Derek Nuckols (Mustang Engineering, ’06)
David Brookman (Flight Safety, ’04)
Nathan Canter (Boeing, ’04)
Benjamin Martin (United States Navy, ’04)
Philip Snell (Spirit AeroSystems, ’04)
Matthew Bohm (Caterpillar Work Tools, ’03)
Lion Clendenen (Univ. of Missouri, School of Dentistry, ’03)
Chris Moyer (Bean’s Industries, ’03)
Erin Winter (Jacobs Engineering, ’03)
Timothy Wrinkle (Volvo Trucks North America, ’03)
Mark Rascheke (International Truck & Engine Corp, ’02)
David Arriola (Spirit AeroSystems, ’08)
Brady Barkley (Texas A&M Univ., ’08)
Erick Escobar (Schlumberger, ’08)
John Lee (Univ. of Arkansas, ’08)

CONTACT

About the Department:
Dr. Byron Newberry
Chair, Department of Mechanical Engineering
Oklahoma Christian University
Box 11000
Oklahoma City, OK 73136
www.oc.edu/engineering
405.425.5400
byron.newberry@oc.edu

School of Engineering and OC Admissions:
Jon Hughes
Engineering Admissions Specialist
Oklahoma Christian University
Box 11000
Oklahoma City, OK 73136
800.877.5010
www.oc.edu
jon.hughes@oc.edu
Preparation for Starting a Degree in Mechanical Engineering

The degree plan for Mechanical Engineering presumes that the student has obtained a solid high school level foundation in mathematics and science. Preferably, this foundation would include programming, algebra, trigonometry, pre-calculus, chemistry and physics. If these courses have not been mastered in high school, the student may find it necessary to take some introductory course work before moving into the degree plan.

General Education Requirements for BSME Degree
Total: 34 hours

Basic Skills (6 hours)
- SDEV-1101 Freshman Seminar
- ENGL-1134 Communication for Engineers
- PHED-2511 Physical Fitness and Wellness

Core Bible (16 hours)
- BIBL-1212 Life of Christ: Matthew
- BIBL-1312 Life of the Early Church: Acts
- BIBL-2202 Story of the Old Testament
- BIBL-2302 Story of the New Testament
- BIBL-3443 Bible as Literature
- MISS-3513 World Religions
- BIBL-4222 Senior Bible Seminar

Basic Perspectives (12 hours)
- HIST-1223 Turning Points in US History
- PSYC/SOCI-1113 Perspectives in Psychology (or Sociology)
- CLTR-2913 Western Art & Culture
- PHIL-4113 Senior Philosophy Seminar

Math and Science Education Requirements for the BSME Degree
Total: 32 Hours

Math (18 hours)
- MATH-2114 Calculus I
- MATH-2214 Calculus II
- MATH-2314 Calculus III
- MATH-3013 Differential Equations
- ENGR-3023 Engineering Math

Science (11 hours)
- CHEM-1314 General Chemistry for Engineers
- PHYS-1811 Physics I Lab
- PHYS-2513 Physics I
- PHYS-2613 Physics II

Math or Science (3 hours)
- ENGR-4113, MATH-3513, MATH-3613, MATH-3813, MATH-4113, MATH-4313
- BIOL-2114, CHEM-1215, PHYS-2613
# Engineering Education Requirements for the BSME Degree

Total: 62 Hours

## Engineering Science (23 hours)
- **ENGR-1111**  Introduction to Engineering
- **ENGR-1122**  Engineering Computing
- **ENGR-1242**  Engineering Fundamentals
- **ENGR-2312**  Statics
- **ENGR-2523**  Strength of Materials
- **ENGR-2433**  Thermodynamics
- **ENGR-2523**  Dynamics
- **ENGR-2623**  Mechanical Engineering Instrumentation
- **ENGR-3213**  Engineering Economics
- **ENGR-3311**  Experimental Mechanics

## Mechanical Engineering (33 hours)
- **MECH-3443**  Fluid Mechanics
- **MECH-3453**  Advanced Thermodynamic Systems
- **MECH-3613**  Engineering Materials & Manufacturing Processes
- **MECH-3813**  Mechatronics
- **MECH-4123**  Machine Dynamics
- **MECH-4133**  Dynamic Systems & Controls
- **MECH-4213**  Machine Design
- **MECH-4243**  Heat Transfer
- **MECH-4311**  Thermal-Fluid Lab
- **MECH-4732**  Systems Design I
- **MECH-4743**  Systems Design II
- **MECH-4753**  Systems Design III

## Technical Electives (6 hours, available classes subject to change)
- **MECH-4233**  Heating, Ventilation & Air Conditioning
- **MECH-4313**  Aerodynamic Design
- **MECH-4513**  Advanced Mechanics of Materials
- **MECH-4533**  Vibration Theory & Application
2008-09 Mechanical Engineering Degree Plan Flowchart

Technical Curriculum

Core Curriculum

Yellow = General Education
Blue = Math/Science
Orange = Engineering Science
Green = Mechanical Engineering
Red = Senior Capstone

Solid lines imply a pre-requisite relation
Dashed lines imply a co-requisite relation

See Academic Catalog requirements for electives. Advisor permission required for senior capstone.
2008-2009 MECHANICAL ENGINEERING

Listed below are three plans for completing the OC mechanical engineering requirements. The first plan (EIGHT SEMESTERS) requires a heavy load each and every semester (and/or summer courses). Students needing to start in College Algebra and Trigonometry (instead of Calculus I) should plan to spend ten semesters completing the program.

### COMPLETION IN EIGHT SEMESTERS, STARTING IN CALCULUS 1

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