2014-2015 Catalogue

MECHANICAL ENGINEERING B.S.ME.

All students must meet the University Requirements.

The curriculum leading to a degree of Bachelor of Science in Mechanical Engineering offers instruction in design, solid and thermo-fluid mechanics, materials, manufacturing processes and systems, as well as in engineering, life and physical sciences, humanities, and social sciences.

The Mechanical Engineering program offers four concentration areas for students interested in focusing their technical elective course work. The concentration areas include: Aerospace Engineering; Bioengineering; Mechanics of Materials & Structures; and Sustainable Energy.

Engineering design is developed and integrated into each student's program and culminates in a required major design experience which draws upon prior course work and which focuses on the issues and expectations of professional practice.

In the curricular listings that follow, students should make note that MATH 271 is an implicit prerequisite for all 100+ level courses in mechanical engineering.

MECHANICAL ENGINEERING PROGRAM EDUCATIONAL OBJECTIVES

The Mechanical Engineering program provides a modern mechanical engineering education with focus in engineering decision-making; foundations of mathematics, physical science, engineering science and design; and an appreciation of societal impact of engineering practice, which prepares graduates to:

1. Excel as practicing mechanical engineers in a wide range of careers in industry, government service, and consulting;
2. Participate in continuous learning throughout their careers, both in more advanced engineering and in other areas of study;
3. Communicate and work effectively with teams of people with diverse educational and cultural backgrounds;
4. Take on leadership roles in their profession;
5. Practice their profession in an ethically, socially, economically, and environmentally responsible manner.

PLAN OF STUDY

THE CURRICULUM FOR THE B.S. IN MECHANICAL ENGINEERING

First Year		**Credits**
	Fall	**Spring**
CHEM 031 General Chemistry 1	4	
ENGR 002 Graphical Communication	2	
ENGS 001 Written Expression	3	
MATH 021 Calculus I	4	
HSS Electives[1]	3	3
CS 020 Programming for Engineers		3
MATH 022 Calculus II		4
ME 001 First-Year Design Experience[2]		2
PHYS 030 Physics Problem Solving I (Optional)		0-1
PHYS 031 Physics for Engineers I		4
Year Total:	16	16-17

Sophomore		**Credits**
	Fall	**Spring**
CE 001 Statics[3]	3	
MATH 121 Calculus III	4	
ME 040 Thermodynamics[3]	3	
ME 081 Mech Engr Shop Experience[3]	1	
PHYS 123 Physics Problem Solving II (Optional)	0-1	
PHYS 125 Physics for Engineers II	3	
ME 012 Dynamics[3]		3
ME 014 Mechanics of Solids[3]		3
ME 042 Applied Thermodynamics[3]		3
ME 083 Computational Mech. Engr. Lab[3]		1
MATH 271 Adv Engineering Mathematics		3
HSS Elective[1]		3
Year Total:	14-15	16

Junior		**Credits**
	Fall	**Spring**
EE 100 Electrical Engr Concepts	4	
MATH 124 Linear Algebra	3	
ME 101 Materials Engineering	3	
ME 111 System Dynamics	3	
ME 123 Thermo-Fluid Lab	2	
ME 143 Fluid Mechanics	3	

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EE 101 Digital Control w/Embedded Sys		4
ME 124 Materials and Mechanics Lab		2
ME 144 Heat Transfer		3
ME 171 Design of Elements		3
STAT 143 Statistics for Engineering		3
Year Total:	18	15
Senior		**Credits**
	Fall	**Spring**
ME 161 Modern Manufacturing Processes	3	
ME 185 Capstone Design I	3	
ME Elective[4]	3	
Technical Elective[5]	3	
HSS Electives[1]	3	3
ME 186 Capstone Design II		2
Choose two ME electives[4]		6
Technical Electives[5]		3
Year Total:	15	14
Total Credits in Sequence:		**124-126**

1 Required Humanities and Social Science (HSS): fifteen credits of approved HSS electives, including three credits of D1 and three credits of D1 or D2. Six HSS credits must be from the same offering department (e.g. ANTH or GEOG).

2 Transfer students without applicable transfer credit have the option of either taking ME 001 or replacing the credits with engineering course work at the 100-level or higher.

3 Pre-Engineering Technical (PET) requirements: MATH 021 and MATH 022, CHEM 031, PHYS 031 and CS 020. All PET courses must be completed with C- or better before any sophomore engineering courses may be taken.

4 ME Course 200-level or higher.

5 Any 100-level or higher courses in ENGR, EE, ME, CS and MATH; STAT 151 or higher; CS 021; or natural sciences with approval of advisor.