Engineering
Masters of Mechanical Engineering

Mechanical engineering is the discipline that applies the principles of engineering, physics and materials science for the design, analysis, manufacturing, and maintenance of mechanical systems. It is the branch of engineering that involves the design, production, and operation of machinery and tools. It is one of the oldest and broadest of the engineering disciplines.

The engineering field requires an understanding of core concepts including mechanics, kinematics, thermodynamics, materials science, structural analysis, and electricity. Mechanical engineers use these core principles along with tools like computer-aided engineering, and product lifecycle management to design and analyze manufacturing plants, industrial equipment and machinery, heating and cooling systems, transport systems, aircraft, watercraft, robotics, medical devices, weapons, and others.

Recommended Course Work

Students choosing to pursue a degree in Mechanical Engineering upon graduating Christendom College are advised to complete the following course at Christendom College:

MATH 150 INTRODUCTION TO STATISTICS
MATH 361 DIFFERENTIAL EQUATIONS
MATH 103 EUCLIDEAN GEOMETRY
MATH 201 CALCULUS I
MATH 202 CALCULUS II
MATH 203 CALCULUS III
MATH 204 LINEAR ALGEBRA
MATH 105 COLLEGE ALGEBRA AND TRIGONOMETRY
MATH 153 COMPUTER PROGRAMMING
Prerequisites

Students choosing to complete an Engineering degree upon graduating from Christendom College are advised to seek counsel from individual schools concerning degree requirements. Some students will need to complete a second bachelors degree in engineering. In some cases, students need to have an engineering degree or a degree in related disciplines to complete graduate work. It is recommended that students intending to receive additional schooling complete the mathematics minor or mathematics major to aid in their preparation. One should also should have a strong knowledge of mathematics, especially the higher mathematics. In addition, one ought to have letters of recommendation ready as well as projects and engineering drawings one may have created.

Sample Prerequisites:

General prerequisites for a Masters Degree in Engineering from Stony Brook University¹

- Bachelor’s degree
- Official transcripts from all institutions of higher education previously attended
- A detailed resume and an employment profile
- Satisfactory GRE scores (if pursuing graduate work)
- Application for Admission with the required fee
- Two or three letters of recommendation.
- Completed essays submitted with the Admissions Application
- Completion of the prerequisites

Sample Curriculum

Course requirements for a Masters of Mechanical Engineering at Stevens Institute of Technology²:

CORE COURSE REQUIREMENTS FOR FULL DEGREE
ME 641 Engineering Analysis I
ME 635/IPD 611 Modeling and Simulation
ME 636/IPD 612 Project Management and Organizational Design

¹http://sb.cc.stonybrook.edu/gradbulletin/current/index.pdf Accessed 02/05/2015
²http://www.stevens.edu/sit/graduate/master-of-engineering-in-mechanical-engineering.cfm Accessed 01/12/2015
and two more courses from any one of the following tracks:
- Manufacturing Systems
- Pharmaceutical Manufacturing Systems
- Product Design
- Thermal Engineering

COURSE REQUIREMENTS FOR FOUR-COURSE CERTIFICATE PROGRAM

**Manufacturing Systems:**
ME 644 Computer-Integrated Design and Manufacturing
ME 645 Design of Production Systems
ME 652 Advanced Manufacturing
ME 665 Advanced Product Development

**Pharmaceutical Manufacturing Systems:**
ME 535 Good Manufacturing Practices in Pharmaceutical Facilities Design
ME 540 Validation and Regulatory Affairs in Pharmaceutical Manufacturing
ME 628 Pharmaceutical Finishing and Packaging Systems
ME 645 Production Systems

**Product Design:**
ME 615 Thermal System Design
ME 644 Computer-Integrated Design and Manufacturing
ME 659 Advanced Structural Design
ME 665 Advanced Product Development

**Thermal Engineering:**
ME 601 Engineering Thermodynamics
ME 604 Advanced Heat Transfer
ME 615 Thermal Systems Design
ME 674 Fluid Dynamics