

# University of the Incarnate Word<sup>®</sup>

## Bachelor of Science in **Mechanical Engineering**

School of Mathematics, Science and Engineering

### PROGRAM OVERVIEW

The Bachelor of Science (B.S.) in Engineering in the School of Mathematics, Science and Engineering at the University of the Incarnate Word develops highly skilled, highly educated mechanical engineering professionals ready to succeed in the lab, in the field or in the C-suite.

The B.S. in Mechanical Engineering combines a strong core of math, science and engineering courses with a rigorous curriculum and intensive study. Students will develop knowledge of a field critical in the technology that makes modern life possible.

The degree is a hands-on program that includes courses covering the following topics, among others—mechanical vibrations, degrees of freedom for movement in a structure, stress analysis of elastic solids, finite elements, stress in solids, fatigue failure, gears, springs, thermophysical properties, heat transfer and heat exchangers. Students can expect to explore the inner workings of complex machines like vehicles and industrial equipment. Graduates are also prepared to pursue a graduate degree in mechanical engineering.

Mechanical engineering students also have the opportunity to work with faculty on ongoing research projects — among them, Unmanned Aircraft Systems (UAS) as part of the department's Autonomous Vehicle Systems (AVS) Lab. The Capstone course challenges students to apply their engineering education and apply it as a solution or innovation to a contemporary issue.

### ADMISSION REQUIREMENTS

The requirements for admission to the B.S. in Mechanical Engineering program are the same as the requirements for admission to the University of the Incarnate Word.

### CONTACT

**UIW Admissions**  
(210) 829-6005  
admission@uiwtx.edu

**YOUR  
JOURNEY  
OUR  
MISSION**

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**Mechanical Engineering (B.S.)**

# B.S. in Mechanical Engineering

## FRESHMAN YEAR

### Fall

CHEM 1301: Chemical Principles I (3 hours)  
 CHEM 1101: Chemical Principles I Lab (1 hour)  
 ENGR 1310: Engineering Graphics CAD I (3 hours)  
 ENGL 1311: Composition I (3 hours)  
 ENGR 1201: Intro to Engineering (2 hours)  
 FYES 1211: First Year Experience Seminar (2 hours)  
 MATH 2312: Calculus I (3 hours)

**Total Hours: 17**

### Spring

ECON 2301: Macroeconomics (3 hours)  
 ENGL 1312: Composition II (3 hours)  
 ENGR 2305: Engineering Physics I (3 hours)  
 ENGR 2105: Engineering Physics I Lab (1 hour)  
 ENGR 2330: Engineering Prob. & Statistics  
 (3 hours)  
 MATH 2313: Calculus II (3 hours)  
 PEHP Physical Education (1 hour)

**Total Hours: 17**

## SOPHOMORE YEAR

### Fall

MATH 2314: Differential Equations (3 hours)  
 ENGR 2306: Engineering Physics II (3 hours)  
 ENGR 2106: Engineering Physics II Lab (1 hour)  
 MATH 2322: Linear Algebra (3 hours)  
 ENGR 2350: Statics (3 hours)  
 Modern Language I (3 hours)

**Total Hours: 16**

### Spring

ENGL 2310: World Literature Studies (3 hours)  
 ENGR 2340: Computer Programming (3 hours)  
 ENGR 2360: Circuit Analysis (3 hours)  
 ENGR 2160: Circuit Analysis Lab (1 hour)  
 MATH 3314: Calculus III (3 hours)  
 Modern Language II (3 hours)

**Total Hours: 16**

## JUNIOR YEAR

### Fall

ENGR 3355: Mechanics of Materials (3 hours)  
 ENGR 3155: Mechanics of Materials Lab (1 hour)  
 ENGR 3340: Numerical Methods and Advanced  
 Programming (3 hours)  
 ENGR 3373: Dynamics (3 hours)  
 ENGR 3375: Thermodynamics (3 hours)  
 Fine Arts (3 hours)

**Total Hours: 16**

### Spring

ENGR 3330: Engineering Analysis (3 hours)  
 ENGR 3360: Materials Engineering (3 hours)  
 ENGR 4370: Fluid Mechanics (3 hours)  
 ENGR 4170: Fluid Mechanics Lab (1 hour)  
 ENGR 4353: Mechanical Vibrations (3 hours)  
 RELS 1305, 1315, 1325, or 1327H (3 hours)

**Total Hours: 16**

## SENIOR YEAR

### Fall

ENGR 4180: Senior Design 1 (1 hour)  
 ENGR 4310: Design of Mechanisms (3 hours)  
 ENGR 4354: Finite Element Analysis (3 hours)  
 HIST 1311, 1312, 1321, 1322 (3 hours)  
 PHIL 1381: Intro to Philosophy (3 hours)  
 Upper-Level Technical Elective (3 hours)

**Total Hours: 16**

### Spring

ENGR 4357: Mechanical Design (3 hours)  
 ENGR 4373: Heat Transfer (3 hours)  
 ENGR 4380: Senior Design 2 (3 hours)  
 Upper-Level RELS or PHIL (3 hours)  
 Upper-Level Technical Elective (3 hours)

**Total Hours: 15**

129 hours needed to complete the B.S. in Mechanical Engineering

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