

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

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

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 engineering professionals ready to succeed in the lab, in the field or in the C-suite.

The B.S. in Engineering combines a strong core of math, science and engineering courses with intensive study in one of four concentration. Students can choose from electrical, mechanical, management and mechatronics concentrations based on their career or academic goals.

The Mechanical concentration 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 specializing in this concentration are also prepared to pursue a graduate degree in mechanical engineering.

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

# B.S. in Engineering - Mechanical

## FRESHMAN YEAR

### Fall

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

**Total Hours: 14**

### Spring

MATH 2313: Calculus II (3 hours)  
 ENGR 2330: Engineering Prob. & Statistics (3 hours)  
 ENGR 1310: Engineering Graphics CAD I (3 hours)  
 ENGL 1312: Composition II (3 hours)  
 PEHP Physical Education (1 hour)  
 ECON 2301: Macroeconomics (3 hours)

**Total Hours: 16**

## SOPHOMORE YEAR

### Fall

MATH 2322: Linear Algebra (3 hours)  
 ENGL 2310: World Literature Studies (3 hours)  
 ENGR 2305: Engineering Physics I (3 hours)  
 ENGR 2105: Engineering Physics I Lab (1 hour)  
 ENGR 2340: Computer Programming (3 hours)  
 Modern Language I (3 hours)

**Total Hours: 16**

### Spring

ENGR 3350: Statics (3 hours)  
 ENGR 2306: Engineering Physics II (3 hours)  
 ENGR 2106: Engineering Physics II Lab (1 hour)  
 PHIL 1381: Intro to Philosophy (3 hours)  
 MATH 2314: Differential Equations (3 hours)  
 Modern Language II (3 hours)

**Total Hours: 16**

## JUNIOR YEAR

### Fall

ENGR 3330: Engineering Analysis (3 hours)  
 ENGR 3340: Numerical Methods and Advanced  
 Programming (3 hours)  
 Fine Arts (3 hours)  
 ENGR 3373: Dynamics (3 hours)  
 ENGR 3355: Mechanics of Materials (3 hours)  
 ENGR 3155: Mechanics of Materials Lab (1 hour)

**Total Hours: 16**

### Spring

ENGR 4353: Mechanical Vibrations (3 hours)  
 ENGR 4370: Fluid Mechanics (3 hours)  
 ENGR 4170: Fluid Mechanics Lab (1 hour)  
 ENGR 4357: Mechanical Design (3 hours)  
 RELS 1305, 1315, 1325, or 1327H (3 hours)  
 ENGR 2360: Circuit Analysis (3 hours)  
 ENGR 2160: Circuit Analysis Lab (1 hour)

**Total Hours: 17**

## SENIOR YEAR

### Fall

MATH 3314: Calculus III (3 hours)  
 Upper Level RELS or PHIL (3 hours)  
 ENGR 4375: Thermodynamics (3 hours)  
 ENGR 3360: Materials Engineering (3 hours)  
 Upper-Level Technical Elective (3 hours)  
 ENGR 4180: Senior Design 1 (1 hour)

**Total Hours: 16**

### Spring

HIST 1311, 1312, 1321, 1322 (3 hours)  
 ENGR 4373: Heat Transfer (3 hours)  
 ENGR 4310: Design of Mechanisms (3 hours)  
 ENGR 4380: Senior Design 2 (3 hours)  
 ENGR 4354: Finite Element Analysis (3 hours)  
 Upper-Level Technical Elective (3 hours)

**Total Hours: 18**

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