



# ENGINEERING

**Mechatronics Track**

**School of Mathematics, Science & Engineering**

**Degree Overview** Engineering challenges in the 21st century require highly skilled, highly educated professionals. The demand for engineers in the U.S. grows every year. The modern engineer must be able to balance technology with the real world concerns of human resources and social issues. A student who graduates with Bachelor of Science in Engineering (BSE) degree will bring a unique set of skills to any future career.

**Mechatronics Track** The BSE degree combines a strong core of Math, Science and Engineering courses with an intensive study in a designated Track. UIW Engineering gives a broad knowledge of general engineering and a strong foundation in mathematics. The Mechatronics track will allow a student to combine courses from the Electrical and Mechanical track for an individualized course of study. For example, to design a wind farm for electrical production, a student would take mechanical courses covering vibrations, stress analysis, and gears. They would also take electrical courses in circuitry, signal analysis, and control of systems. Another example in Mechatronics might be the design of a heating/cooling system for an industrial plant. The student would take courses in computer programming and control theory, plus heat transfer and thermophysical properties. The combination of courses would be approved by the Academic Advisor. The Mechatronics track has the support of companies such as CPS Energy, SAWS, and other local industries.

**Pre-Engineering at UIW** UIW also offers a Pre-Engineering program, which emphasizes study in math and science as a preparation for a degree in science or engineering. The program is for students who may want to transfer to another school for their engineering degree. The 2-year UIW program provides a strong background in Science, Math, and Computer Programming.

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**Website** [www.uiw.edu/engineering](http://www.uiw.edu/engineering)

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**Bachelor of Science in Engineering - Mechatronics Track**  
**SCHOOL OF MATH, SCIENCE, & ENGINEERING**  
**2015-2017**

Freshman Year: Fall		Hrs.	Freshman Year: Spring		Hrs.
CHEM 1301 Chemical Principles I		3	CHEM 1302 Chemical Principles II		3
MATH 2312 Calculus I		3	CHEM 1203 General Chemistry Lab		2
ENGL 1311 Composition I		3	MATH 2313 Calculus II		3
ENGR 1201 Introduction to Engineering		2	ENGL 1312 Composition II		3
ENGR 1310 Engineering Graphics CAD I		3	ENGR 1312 Engineering Graphics CAD II		3
ECON 2301 Macroeconomics		3	PEHP 11xx Physical Education		1
<b>Total hours</b>		<b>17</b>	<b>Total hours</b>		<b>15</b>
Sophomore Year: Fall			Sophomore Year: Spring		
MATH 2322 Linear Algebra		3	ENGR 2340 Computer Programming		3
ENGR 2330 Engineering Prob & Statistics		3	MATH 2314 Differential Equations		3
ENGR 2305 Engineering Physics I		3	ENGR 2306 Engineering Physics II		3
ENGR 2105 Engineering Physics I Lab		1	ENGR 2106 Engineering Physics II Lab		1
ENGL 2310 World Literature Studies		3	PHIL 1381 Introduction to Philosophy		3
Modern Language I		3	Modern Language II		3
<b>Total hours</b>		<b>16</b>	<b>Total hours</b>		<b>16</b>
Junior Year: Fall			Junior Year: Spring		
ENGR 3340 Numerical Methods		3	ENGR 3430 Engineering Analysis and Lab		4
ENGR 4375 Thermodynamics		3	ENGR 4399 Special Topics		3
ENGR 4399 Special Topics		3	ENGR 3350 Statics		3
HIST 1311, 1312, 1321, 1322		3	Fine Arts Core		3
Mechatronics Track Course		3	Mechatronics Track Course		3
<b>Total hours</b>		<b>15</b>	<b>Total hours</b>		<b>16</b>
Senior Year: Fall			Senior Year: Spring		
ENGR 3460 Circuit Analysis and Lab		4	ENGR 3462 Electronics and Lab		4
RELS 1305, 1315, 1325, or 1327		3	Upper level RELS or PHIL		3
ENGR 3455 Mechanics of Materials and Lab		4	ENGR 4470 Fluid Mechanics and Lab		4
DWHP 1200 Dimensions of Wellness		2	ENGR 4490 Senior Capstone		4
Mechatronics Track Course		3	Mechatronics Track Course		3
<b>Total hours</b>		<b>16</b>	<b>Total hours</b>		<b>18</b>
<b>Core Curriculum - Total Hours</b>		<b>40</b>	<b>Major - Total Hours</b>		<b>89</b>
<b>Major - Total Hours</b>		<b>89</b>	<b>Degree - Total Hours</b>		<b>129</b>
<b>Degree - Total Hours</b>		<b>129</b>			

**MECHATRONICS TRACK COURSES**

Two courses from the Electrical track and two courses from the Mechanical track, as approved by the student academic adviser.

**MECHANICAL TRACK COURSES**

ENGR 3373 Dynamics  
 ENGR 4354 Finite Element Analysis  
 ENGR 4357 Mechanical Design  
 ENGR 4353 Mechanical Vibrations  
 ENGR 4373 Heat Transfer

**ELECTRICAL TRACK COURSES**

ENGR 2463 Digital Logic  
 ENGR 3364 Signals and Systems  
 ENGR 4366 Digital Signal Processing  
 ENGR 4368 Introduction to Control Systems