

**Course Objectives/Course Outline  
Spokane Community College**

**Course Title:** Mechatronics Capstone

**Prefix and Course Number:** IMMA 223

**Course Learning Outcomes:**

**By the end of this course, a student should:**

- Design a device to perform a function, such as a robot or automated system, that integrates multiple technologies such as hydraulics, pneumatics, electrical systems, and programmable logic controllers
- Conduct research using print and online sources
- Create engineering drawings, diagrams, and/or schematics that contain written specifications for a device
- Create components for a device using machine tools, welding equipment, hand tools, and related techniques
- Apply inspection and repair techniques to salvaged components
- Demonstrate use of assembly techniques, including proper wiring, hoses and tubing (where applicable), and use of fasteners, to create a functional device
- Demonstrate safe and proper use of hand tools, machine tools, welding equipment, measuring tools, and other shop equipment
- Inspect, test, and perform repairs and/or improvements to the completed device
- Demonstrate leadership, teamwork, and group process skills throughout class activities

**Course Outline:**

A. *NOTE:* This course schedule is subject to change at the discretion of the instructor.

<p><b>Week 1: Project Orientation and Safety</b> Introduction and Overview Project Rubric Review Topic: Safety and Work Environment Begin Project Planning</p>	<p><b>Week 7: Capstone Project</b> Weekly Review Topic Continue Capstone Project</p>
<p><b>Week 2: Capstone Project Planning</b> Weekly Review Topic Design, Project Planning, Specifications Research, Written Project Plans Create Sketch, Schematics, or Prototype (if applicable)</p>	<p><b>Week 8: Midterm Project Evaluation</b> Weekly Review Topic Complete Initial Capstone Project Complete Midterm Evaluation and initial scoring of project</p>
<p><b>Week 3: Capstone Project</b> Weekly Review Topic Gather Materials Create, Repair, Assemble Project Components Test Project; Make repairs/improvements if needed</p>	<p><b>Week 9: Capstone Project -Make Changes</b> Weekly Review Topic Continue Capstone Project (new manufacturing scenario)</p>
<p><b>Week 4: Capstone Project</b> Weekly Review Topic Continue Capstone Project</p>	<p><b>Week 10: Capstone Project -Make Changes</b> Weekly Review Topic Continue Capstone Project (new manufacturing scenario)</p>

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<b>Week 5: Capstone Project</b> Weekly Review Topic Continue Capstone Project	<b>Week 11: Capstone Project - Finish Changes</b> Weekly Review Topic Continue Capstone Project
<b>Week 6: Capstone Project</b> Weekly Review Topic Continue Capstone Project	<b>Week 12: Capstone Project Showcase &amp; Final Project Evaluation</b> Capstone Project Showcase Final evaluation and scoring of project Peer Reviews