

# B.S. in Mechatronics Engineering Technology

## Program Description

The Bachelor of Science in Mechatronics Engineering Technology degree prepares students to apply mathematical and scientific principles to the design, development and operational evaluation of automated systems (computer-controlled with embedded electronics, sensors and actuators).

## Delivery Mode

Traditional (on campus)

## Curriculum

Course	Credits
<b>General Education Courses</b>	<b>41</b>
<i>Building a Sense of Community</i> <b>UNI 100</b> First-Year Seminar	1
<i>Composition</i> <b>ENG 101</b> English Composition I	3
<i>Public Speaking</i> Any Public Speaking Course	3
<i>Mathematics and Quantitative Literacy</i> <b>MAT 281</b> Calculus I	3
<i>Health and Wellness</i> Any Health and Wellness Course	3
<i>Technological Literacy</i> <b>CSC 120</b> Problem Solving and Programming Constructs	3
<i>Humanities</i> Any Humanities Course	3
<i>Fine Arts</i> Any Fine Arts Course	3
<i>Natural Sciences</i> <b>PHY 121</b> General Physics I	4
<i>Social Sciences</i> <b>ECO 201</b> Introduction to Microeconomics	3
<i>General Education Options</i> <ul style="list-style-type: none"> <li>• Any Ethics and Multicultural Awareness Emphasis Course</li> <li>• <b>ITE 305</b> OSHA General and Industrial Safety</li> <li>• <b>MAT 199</b> Pre-Calculus (see program notes)</li> </ul>	12

## Department of Computer Science, Information Systems and Engineering Technology

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Course	Credits
• <b>ENG 217</b> Scientific and Technical Writing	
<b>Required Major Courses</b>	<b>56</b>
<b>EET110</b> Electric Circuits I	4
<b>EET 160</b> Electric Circuits II	4
<b>EET 215</b> Introduction to Instrumentation	3
<b>CET 235</b> Digital Electronics Design	4
<b>MAT 282</b> Calculus II	3
<b>MTR 300</b> Manufacturing Processes	3
<b>MTR 310</b> Principles of Automatic Control	3
<b>MTR 320</b> Statics	3
<b>MTR 325</b> Fundamentals of Programmable Logic Controllers	3
<b>MTR 330</b> Dynamics	3
<b>MTR 335</b> Advanced PLCs and Integration	3
<b>MTR 340</b> Fluid Power	3
<b>MTR 370</b> Properties and Strength of Materials	4
<b>MTR 400</b> Machine Design Elements and Kinematics	3
<b>MTR 410</b> Process Control	3
<b>MTR 420</b> Computer-Integrated Manufacturing	3
<b>MTR 445</b> Senior Project Proposal	1
<b>MTR 450</b> Senior Project	3
<b>Required Related (Cognate Area of Study) Courses</b>	<b>20</b>
<b>PHY 122</b> General Physics II	4
<b>CSC 124</b> Computer Programming I	3
<b>GET 130</b> Introduction to Engineering Technology	3
<b>EET 325</b> Introduction to Electric Power	4
<b>ITE 375</b> Principles of Production	3
<b>ITE 215</b> CAD I	3

## Department of Computer Science, Information Systems and Engineering Technology

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Course	Credits
<b>Related (Technical) Electives</b>	<b>3</b>
Select a course from the following: <ul style="list-style-type: none"> <li>• <b>MTR 495</b> Mechatronics Internship (4 credits)</li> <li>• <b>ITE 460</b> Principles of Manufacturing (3 credits)</li> <li>• <b>ITE 385</b> Industrial Cost Estimating (3 credits)</li> <li>• <b>CIS 341</b> CISCO CCNA 1 (4 credits)</li> <li>• <b>CET 335</b> Microprocessor Interfacing (4 credits)</li> <li>• <b>CET 270</b> Introduction to Microprocessor Design (4 credits)</li> <li>• <b>RET 260</b> Robotics Systems Project (3 credits)</li> <li>• <b>RET 210</b> Robotic Teaming (3 credits)</li> <li>• <b>CIS 354</b> Systems Project Management (3 credits)</li> <li>• Other course approved by adviser</li> </ul>	3
<b>Total</b>	<b>120</b>

Additional requirements, not counted toward the General Education requirements, include:

- **Special Experience Course (1 course required):** MTR 400 Machine Design Elements and Kinematics
- **Writing-Intensive Component Courses (2 courses required):** MTR 420 Computer Integrated Manufacturing AND MTR 445 Senior Proposal / MTR 450 Senior Project
- **Laboratory Course (1 course required):** MTR 410 Process Control

### Program Notes

- "Required Related (Cognate Area of Study) Courses" are required to meet ETAC of ABET criteria 1, 2, 3 and 5.
- MAT 181 (College Algebra, 3 credits) and MAT 191 (College Trigonometry, 3 credits) may be substituted for MAT 199, if math placement test does not permit direct entry into Pre-Calculus or if student desires a less intense math coverage.
- Students must complete 42 credits in upper-division coursework (300- and 400-level courses).

## Program Webpage

<https://www.calu.edu/academics/undergraduate/bachelors/mechatronics-engineering-technology/index.aspx>