# Mechatronics Robotics Engineering, B.A.Sc (Class of 2026)

## First Year 2022-2023

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Units</th>
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<tbody>
<tr>
<td>MREN 103</td>
<td>Mechatronics and Robotics Design I</td>
<td>4.00</td>
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<tr>
<td>MREN 178</td>
<td>Data Structures and Algorithms</td>
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<tr>
<td>APSC 101</td>
<td>Engineering Design &amp; Practice</td>
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<tr>
<td>APSC 102</td>
<td>Experimentation</td>
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<tr>
<td>APSC 111</td>
<td>Physics I</td>
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<tr>
<td>APSC 112</td>
<td>Physics II</td>
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<tr>
<td>APSC 131</td>
<td>Chemistry of Engineering Materials and Processes</td>
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<tr>
<td>APSC 143</td>
<td>Introduction to Computer Programming for Engineers</td>
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<tr>
<td>APSC 162</td>
<td>Engineering Graphics</td>
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<tr>
<td>APSC 172</td>
<td>Calculus II</td>
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<tr>
<td>MREN 178</td>
<td>Sensors and Electric Actuators</td>
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<tr>
<td>MREN 320</td>
<td>Introduction to Industrial Automation</td>
<td>3.50</td>
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<tr>
<td>MREN 348</td>
<td>Introduction to Robotics</td>
<td>4.00</td>
</tr>
<tr>
<td>ELEC 326</td>
<td>Probability &amp; Random Processes</td>
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<tr>
<td>ELEC 371</td>
<td>Microprocessor Interfacing and Embedded Systems</td>
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<tr>
<td>ELEC 372</td>
<td>Numerical Methods and Optimization</td>
<td>3.50</td>
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<tr>
<td>ELEC 353</td>
<td>Electronics II</td>
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</tr>
<tr>
<td>ELEC 373</td>
<td>Computer Networks</td>
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</tr>
<tr>
<td>MECH 350</td>
<td>Automatic Control</td>
<td>3.50</td>
</tr>
<tr>
<td>Plus choose one (1) Complementary Studies course</td>
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**Total Units**: 41.00

## Second Year 2023-2024

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<tr>
<td>MREN 203</td>
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<tr>
<td>MREN 223</td>
<td>Signals and Systems</td>
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<tr>
<td>MREN 230</td>
<td>Thermodynamics and Heat Transfer</td>
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<td>MREN 241</td>
<td>Fluid Mechanics and Fluid Power</td>
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<td>ELEC 221</td>
<td>Electric Circuits</td>
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<td>ELEC 252</td>
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<td>ELEC 271</td>
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<tr>
<td>MECH 221</td>
<td>Solid Mechanics I</td>
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<tr>
<td>MTHE 228</td>
<td>Complex Analysis</td>
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<tr>
<td>MECH 229</td>
<td>Kinematics and Dynamics</td>
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<tr>
<td>MTHE 237</td>
<td>Differential Equations for Engineering Science</td>
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**Total Units**: 46.00

## Third Year 2024-2025

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<td>APSC 221</td>
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<tr>
<td>MREN 303</td>
<td>Mechatronics and Robotics Design III</td>
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<tr>
<td>MREN 318</td>
<td>Sensors and Electric Actuators</td>
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<tr>
<td>MREN 320</td>
<td>Introduction to Industrial Automation</td>
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<tr>
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**Total Units**: 44.00

## Fourth Year 2025-2026

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<td>Mechatronics and Robotics Design IV</td>
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<td>MREN 410</td>
<td>Intelligent Machines and Autonomous Systems</td>
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<tr>
<td>MREN 403</td>
<td>Mechatronics and Robotics Design IV</td>
<td>8.00</td>
</tr>
<tr>
<td>MREN 410</td>
<td>Intelligent Machines and Autonomous Systems</td>
<td>3.50</td>
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Two Complementary Studies courses

Three Free Technical Electives (Any FEAS course at the 200, 300 or 400 level (timetable permitting), or permission of the program)

Five Primary Technical Electives (recommended Concentrations below):

### Automation
- ELEC 431 | Power Electronics
- ELEC 436 | Electric Machines and Control
- ELEC 474 | Machine Vision
- MECH 423 | Introduction To Microsystems
- MECH 455 | Computer Integrated Manufacturing

### Robotics
- ELEC 436 | Electric Machines and Control
- ELEC 444 | Modeling and Computer Control of Mechatronic Systems
- ELEC 472 | Artificial Intelligence
- ELEC 474 | Machine Vision
- MECH 455 | Computer Integrated Manufacturing

### Biomedical
- ELEC 408 | Biomedical Signal and Image Processing
- MECH 393 | Biomechanical Product Developm
- MECH 394 | Frontiers in Biomechanical Engineering
- MECH 495 | Ergonomics And Design

queensu.ca/academic-calendar
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>MECH 496</td>
<td>Musculoskeletal Biomechanics</td>
</tr>
<tr>
<td><strong>Intelligent Systems</strong></td>
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</tr>
<tr>
<td>ELEC 421</td>
<td>Digital Signal Processing: Filters and System Design</td>
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<td>ELEC 425</td>
<td>Machine Learning and Deep Learning</td>
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<tr>
<td>ELEC 472</td>
<td>Artificial Intelligence</td>
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<td>ELEC 474</td>
<td>Machine Vision</td>
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<td>CMPE 325</td>
<td>Human-Computer Interaction</td>
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