MATHEMATICS AND ENGINEERING, B.A.SC. (CLASS OF 2023)

**Note - Information on this page may be out of date**

**Please view the current 2022-2023 Academic Calendar here:** [https://calendar.engineering.queensu.ca/index.php](https://calendar.engineering.queensu.ca/)

Second Year Common Core - 2020-2021

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>APSC 200</td>
<td>Engineering Design &amp; Practice II</td>
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</tr>
<tr>
<td>APSC 293</td>
<td>Engineering Communications</td>
<td>1.00</td>
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<tr>
<td>MTHE 212</td>
<td>Linear Algebra</td>
<td>3.50</td>
</tr>
<tr>
<td>MTHE 217</td>
<td>Algebraic Structures</td>
<td>3.50</td>
</tr>
<tr>
<td>MTHE 237</td>
<td>Differential Equations for Engineering Science</td>
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</tr>
<tr>
<td>MTHE 280</td>
<td>Advanced Calculus</td>
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</tr>
<tr>
<td>MTHE 281</td>
<td>Introduction To Real Analysis</td>
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**Total Units** 22.25

Applied Mechanics Sub-Plan (M6)

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>ENPH 252</td>
<td>Mangmt Of Experimental Data</td>
<td>1.25</td>
</tr>
<tr>
<td>MECH 210</td>
<td>Electronic Circuits and Motors for Mechatronics</td>
<td>4.50</td>
</tr>
<tr>
<td>MECH 221</td>
<td>Solid Mechanics I</td>
<td>4.00</td>
</tr>
<tr>
<td>MECH 228</td>
<td>Kinematics And Dynamics</td>
<td>3.50</td>
</tr>
<tr>
<td>MECH 230</td>
<td>Applied Thermodynamics I</td>
<td>3.50</td>
</tr>
<tr>
<td>MECH 241</td>
<td>Fluid Mechanics I</td>
<td>3.50</td>
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**Total Units** 42.50

Computing and Communications Sub-Plan (M9)

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Units</th>
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</thead>
<tbody>
<tr>
<td>CMPE 212</td>
<td>Introduction to Computing Science II</td>
<td>4.00</td>
</tr>
<tr>
<td>ELEC 271</td>
<td>Digital Systems</td>
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<tr>
<td>ELEC 274</td>
<td>Computer Architecture</td>
<td>4.00</td>
</tr>
<tr>
<td>ELEC 278</td>
<td>Fundamentals Of Information Structures</td>
<td>4.00</td>
</tr>
<tr>
<td>ENPH 239</td>
<td>Eng. Electricity &amp; Magnetism</td>
<td>3.50</td>
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</table>

**Total Units** 41.75

Systems and Robotics Sub-Plan (M11)

<table>
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<tr>
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<th>Title</th>
<th>Units</th>
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<tr>
<td>Second Year Common Core</td>
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</tr>
<tr>
<td>ELEC 221</td>
<td>Electric Circuits</td>
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<tr>
<td>ELEC 252</td>
<td>Electronics I</td>
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<tr>
<td>ELEC 271</td>
<td>Digital Systems</td>
<td>4.00</td>
</tr>
<tr>
<td>ELEC 274</td>
<td>Computer Architecture</td>
<td>4.00</td>
</tr>
<tr>
<td>ENPH 225</td>
<td>Mechanics</td>
<td>3.50</td>
</tr>
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**Total Units** 42.25

Third Year Common Core - 2021-2022

<table>
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<tr>
<th>Code</th>
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<th>Units</th>
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</thead>
<tbody>
<tr>
<td>APSC 221</td>
<td>Economic And Business Practice</td>
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<td>MTHE 326</td>
<td>Functions of a Complex Variable</td>
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<tr>
<td>MTHE 332</td>
<td>Introduction To Control</td>
<td>4.00</td>
</tr>
<tr>
<td>MTHE 334</td>
<td>Math Methods For Engrg &amp; Phys</td>
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<td>MTHE 335</td>
<td>Math Of Engineering Systems</td>
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<tr>
<td>MTHE 393</td>
<td>Engineering Design and Practice for Mathematics and Engineering</td>
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**Total Units** 21.50

Applied Mechanics Sub-Plan (M6)

<table>
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<tr>
<td>MECH 321</td>
<td>Solid Mechanics II</td>
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<tr>
<td>MECH 323</td>
<td>Machine Design I</td>
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</tr>
<tr>
<td>MECH 328</td>
<td>Dynamics And Vibration</td>
<td>3.50</td>
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<tr>
<td>MECH 330</td>
<td>Applied Thermo II</td>
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<tr>
<td>MECH 341</td>
<td>Fluid Mechanics II</td>
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<td>MECH 398</td>
<td>Mechanical Engineering Laboratory I</td>
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<tr>
<td>MECH 399</td>
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**Total Units** 44.00

Computing and Communications Sub-Plan (M9)

<table>
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<tr>
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<tr>
<td>ELEC 371</td>
<td>Microprocessor Interfacing and Embedded Systems</td>
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<tr>
<td>MTHE 351</td>
<td>Probability I</td>
<td>3.50</td>
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<tr>
<td>MTHE 353</td>
<td>Probability II</td>
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<tr>
<td>CMPE 365</td>
<td>Algorithms I</td>
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**Total Units** 44.00
Systems and Robotics Sub-Plan (M11)

<table>
<thead>
<tr>
<th>Code</th>
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<tbody>
<tr>
<td>Third Year Common Core</td>
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</tr>
<tr>
<td>ELEC 278</td>
<td>Fundamentals Of Information Structures</td>
<td>4.00</td>
</tr>
<tr>
<td>ELEC 371</td>
<td>Microprocessor Interfacing and Embedded Systems</td>
<td>3.00</td>
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<tr>
<td>ENPH 239</td>
<td>Eng. Electricity &amp; Magnetism</td>
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<td>MTHE 351</td>
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<td>MTHE 353</td>
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Fourth Year Common Core - 2022-2023

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<tr>
<td>MTHE 493</td>
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<td>MTHE 494</td>
<td>Mathematics and Engineering Seminar</td>
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Applied Mechanics Sub-Plan (M6)

<table>
<thead>
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<th>Code</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fourth Year Common Core</td>
<td>10.50</td>
<td></td>
</tr>
<tr>
<td>MTHE 430</td>
<td>Control Theory</td>
<td>4.00</td>
</tr>
<tr>
<td>MTHE 351</td>
<td>Probability I</td>
<td>3.50</td>
</tr>
<tr>
<td>MTHE 439</td>
<td>Lagrangian Mechancis, Dynamics ControlB.50</td>
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<tr>
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<td>3.00</td>
<td></td>
</tr>
<tr>
<td>Complementary Studies, List A or B, F or W</td>
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<tr>
<td>Complementary Studies, List A or B, F or W</td>
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<tr>
<td><strong>Total Units</strong></td>
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Electives

M6 students must choose 4 technical electives: a minimum of one (1) technical elective must be taken from List I; and the remaining from List II, subject to the requirement that the elective selection satisfies the following two criteria:

1. the selection exceeds the minimum of 40 Accreditation Units (AUs) in Engineering Design (ED) and
2. the selection exceeds the minimum of 120 AUs in Engineering Design + Engineering Science (ES+ED).

Please Note: the term in which a course is offered can change from one academic year to the next. This can occur due to instructor availability or a change to departmental resources. Please refer to the on-line Course Timetable to determine the terms in which the courses in this Technical Elective section will be offered.

Computing and Communications Sub-Plan (M9)

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fourth Year Common Core</td>
<td>10.50</td>
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</tr>
<tr>
<td>MTHE 474</td>
<td>Information Theory</td>
<td>3.00</td>
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<tr>
<td>MTHE 455</td>
<td>Stochastic Processes &amp; Applications</td>
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</tr>
<tr>
<td>MTHE 477</td>
<td>Data Compression and Source Coding: Theory and Algorithms</td>
<td>3.00</td>
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<tr>
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<td></td>
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<tr>
<td>Complementary Studies, List A or B, F or W</td>
<td>3.00</td>
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<tr>
<td>Complementary Studies, List A or B, F or W</td>
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<tr>
<td><strong>Total Units</strong></td>
<td><strong>29.00</strong></td>
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Electives

M9 students must choose 4 technical electives: a minimum of one (1) technical elective must be taken from List I; and the remaining from List II, subject to the requirement that the elective selection satisfies the following two criteria:

1. the selection exceeds the minimum of 40 Accreditation Units (AUs) in Engineering Design (ED) and
2. the selection exceeds the minimum of 100 AUs in Engineering Design + Engineering Science (ES+ED).

Please Note: the term in which a course is offered can change from one academic year to the next. This can occur due to instructor availability or a change to departmental resources. Please refer to the on-line Course Timetable to determine the terms in which the courses in this Technical Elective section will be offered.


Minimum Total Credits: 41
# Systems and Robotics Sub-Plan (M11)

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fourth Year Common Core</td>
<td></td>
<td>10.50</td>
</tr>
<tr>
<td>MTHE 430</td>
<td>Control Theory</td>
<td>4.00</td>
</tr>
<tr>
<td>MTHE 474</td>
<td>Information Theory</td>
<td>3.00</td>
</tr>
<tr>
<td>MTHE 472</td>
<td>Optimization and Control of Stochastic Systems</td>
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</tr>
<tr>
<td>Complementary Studies, List A or B, F or W</td>
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<td>3.00</td>
</tr>
<tr>
<td>Complementary Studies, List A or B, F or W</td>
<td></td>
<td>3.00</td>
</tr>
<tr>
<td><strong>Total Units</strong></td>
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<td><strong>26.50</strong></td>
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**Electives**

M11 students must choose 4 technical electives: a minimum of one (1) technical elective must be taken from List I; and the remaining from List II, subject to the requirement that the elective selection satisfies the following two criteria:

1. the selection exceeds the minimum of 40 Accreditation Units (AUs) in Engineering Design (ED) and
2. the selection exceeds the minimum of 120 AUs in Engineering Design + Engineering Science (ES+ED).

**Please Note**: the term in which a course is offered can change from one academic year to the next. This can occur due to instructor availability or a change to departmental resources. Please refer to the on-line Course Timetable to determine the terms in which the courses in this Technical Elective section will be offered.


**Minimum Total Credits: 38.5**

**Complementary Studies**

Refer to the Complementary Studies section of this calendar for details regarding the requirements for all Engineering programs. For the Mathematics and Engineering Program, the Engineering Economics course is APSC 221 Economic And Business Practice, and the Communications requirements are met through courses taken in the core program (MTHE 393 Engineering Design and Practice for Mathematics and Engineering, MTHE 494 Mathematics and Engineering Seminar, MTHE 493 Engineering Math Project and APSC 293 Engineering Communications)