

ELECTROMECHANICAL TECHNOLOGY AND ROBOTICS (BS)

Exploration and Discovery

This program is to educate students to build and design real-world automation systems, following a system approach by integrating electromechanics, existing micro controllers, and software. It is to provide students with both theoretical background and practical hands-on experiential learning. It is also to prepare students to become innovators, entrepreneurs, and connectors in a dynamic and complex field, where teamwork is treasured. Finally, it is to connect computer science, electromechanics, and robotics with artistic design and interactive performance.

Degree Requirements

| Course | Title | Credits |
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| Major Requirements | | |
| CS 2010 | Computing Fundamentals (TECO) | 3 |
| CS 2370 | Introduction to Programming | 4 |
| CS 2381 | Data Structures and Intermediate Programming | 4 |
| CS 2470 | Systems Programming in C/C++ | 2 |
| CS 2521 | Introduction to Electromechanical Technology | 3 |
| CS 2525 | Microcontroller and Distributed Systems | 4 |
| CS 3240 | Data Communication and Computer Networks | 3 |
| CS 3420 | Introduction to Cybersecurity | 3 |
| CS 3690 | Robotics I | 4 |
| CS 3720 | Systems Analysis and Design | 3 |
| CS 3890 | Engineering Design | 3 |
| CS 4520 | CyberEthics (DICO,INCO,WRCO) | 3 |
| CS 4690 | Robotics II | 4 |
| CS 4790 | Robotics III | 4 |
| MA 2140 | Precalculus (QRCO,TECO) | 4 |
| MA 2250 | Mathematics for Computer Scientists | 3 |
| MA 2300 | Statistics I (QRCO) | 3 |
| Major Electives | | |
| Complete two courses from the following: | | 6-8 |
| BU 3420 | Organizational Behavior (DICO) | |
| CM 3090 | Technical Communication (TECO,WRCO) | |
| CS 3015 | Mobile Application Development | |
| CS 3221 | Algorithm Analysis | |
| CS 3500 | Introduction to Artificial Intelligence | |
| CS 3600 | Database Management Systems | |
| CS 3650 | Big Data Analytics | |
| CS 3820 | Human-Computer Interaction | |
| CS 4140 | Software Engineering | |
| CS 4230 | System Administration | |
| CS 4310 | Operating Systems | |
| CS 4400 | Computer Networks and Protocols | |
| CS 4500 | Topics in Computer Science and Technology | |

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| CS 4920 | Computer Science Internship (maximum of three credits) | |
| MT 3710 | Meteorological Instruments and Observations (WRCO) | |
| PS 1120 | Cognitive Psychology Laboratory | |
| PS 3220 | Cognitive Psychology | |
| PY 3380 | Humans and Humanoids: Ethics in Technology (TECO) | |
| PY 3610 | Philosophy of Technology (INCO,TECO) | |
| TH 3300 | Design for the Theatre (Topics) | |
| TH 3310 | Theatre Technology: Topics | |
| Calculus | | |
| MA 2490 | Applied Calculus I (QRCO) | 4 |
| or MA 2550 | Calculus I (QRCO) | |
| General Education (https://coursecatalog.plymouth.edu/general-education) | | |
| EN 1400 | Composition | 4 |
| IS 1111 | The First Year Seminar: Critical Thinking and the Nature of Inquiry | 3 |
| CTDI | Creative Thought Direction | 3-4 |
| PPDI | Past and Present Direction | 3-4 |
| SIDI | Scientific Inquiry Direction | 3-4 |
| SSDI | Self and Society Direction | 3-4 |
| Directions (choose from CTDI, PPDI, SIDI, SSDI) ¹ | | 4-8 |
| GACO | Global Awareness Connection | 3-4 |
| WECO | Wellness Connection | 3-4 |
| Electives | | 16-20 |
| Total Credits | | 120 |

¹ Directions should total 20 credits (unless the major has a waiver for a specific Direction).

Recommended Course Sequence

Check all course descriptions for prerequisites before planning course schedule. Course sequence is suggested but not required.

| Course | Title | Credits |
|--|---|---------|
| Year One | | |
| EN 1400 | Composition | 4 |
| IS 1111 | The First Year Seminar: Critical Thinking and the Nature of Inquiry | 3 |
| CS 2010 | Computing Fundamentals (TECO) | 3 |
| CS 2370 | Introduction to Programming | 4 |
| CS 2521 | Introduction to Electromechanical Technology | 3 |
| MA 2250 | Mathematics for Computer Scientists | 3 |
| MA 2300 | Statistics I (QRCO) | 3 |
| CTDI (https://coursecatalog.plymouth.edu/general-education/#CTDI) | Creative Thought Direction | 3-4 |

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| PPDI (https://coursecatalog.plymouth.edu/general-education/#PPDI) | Past and Present Direction | 3-4 |
| Credits | | 29-31 |
| Year Two | | |
| CS 2381 | Data Structures and Intermediate Programming | 4 |
| CS 2470 | Systems Programming in C/C++ | 2 |
| CS 2525 | Microcontroller and Distributed Systems | 4 |
| CS 3240 | Data Communication and Computer Networks | 3 |
| MA 2140 | Precalculus (QRCO,TECO) | 4 |
| Calculus: | | |
| MA 2490 or MA 2550 | Applied Calculus I (QRCO) or Calculus I (QRCO) | 4 |
| SIDI (https://coursecatalog.plymouth.edu/general-education/#SIDI) | Scientific Inquiry Direction | 3-4 |
| SSDI (https://coursecatalog.plymouth.edu/general-education/#SSDI) | Self and Society Direction | 3-4 |
| WECO (https://coursecatalog.plymouth.edu/general-education/#WECO) | Wellness Connection | 3-4 |
| Credits | | 30-33 |
| Year Three | | |
| CS 3420 | Introduction to Cybersecurity | 3 |
| CS 3690 | Robotics I | 4 |
| CS 3720 | Systems Analysis and Design | 3 |
| CS 3890 | Engineering Design | 3 |
| Complete one Major Elective from the following | | 3-4 |
| BU 3420 | Organizational Behavior (DICO) | |
| CM 3090 | Technical Communication (TECO,WRCO) | |
| CS 3015 | Mobile Application Development | |
| CS 3221 | Algorithm Analysis | |
| CS 3500 | Introduction to Artificial Intelligence | |
| CS 3600 | Database Management Systems | |
| CS 3650 | Big Data Analytics | |
| CS 3820 | Human-Computer Interaction | |
| CS 4140 | Software Engineering | |
| CS 4230 | System Administration | |
| CS 4310 | Operating Systems | |
| CS 4400 | Computer Networks and Protocols | |
| CS 4500 | Topics in Computer Science and Technology | |
| CS 4920 | Computer Science Internship (maximum of three credits) | |
| MT 3710 | Meteorological Instruments and Observations (WRCO) | |

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| PS 1120 | Cognitive Psychology Laboratory | |
| PS 3220 | Cognitive Psychology | |
| PY 3380 | Humans and Humanoids: Ethics in Technology (TECO) | |
| PY 3610 | Philosophy of Technology (INCO,TECO) | |
| TH 3300 | Design for the Theatre (Topics) | |
| TH 3310 | Theatre Technology: Topics | |
| Directions (choose from CTDI, PPDI, SIDI, SSDI) (https://coursecatalog.plymouth.edu/general-education/) ¹ | | 4-8 |
| Electives | | 6-9 |
| Credits | | 26-34 |
| Year Four | | |
| CS 4520 | CyberEthics (DICO,INCO,WRCO) | 3 |
| CS 4690 | Robotics II | 4 |
| CS 4790 | Robotics III | 4 |
| Complete one Major Elective from the following: | | 3-4 |
| BU 3420 | Organizational Behavior (DICO) | |
| CM 3090 | Technical Communication (TECO,WRCO) | |
| CS 3015 | Mobile Application Development | |
| CS 3221 | Algorithm Analysis | |
| CS 3500 | Introduction to Artificial Intelligence | |
| CS 3600 | Database Management Systems | |
| CS 3650 | Big Data Analytics | |
| CS 3820 | Human-Computer Interaction | |
| CS 4140 | Software Engineering | |
| CS 4230 | System Administration | |
| CS 4310 | Operating Systems | |
| CS 4400 | Computer Networks and Protocols | |
| CS 4500 | Topics in Computer Science and Technology | |
| CS 4920 | Computer Science Internship | |
| MT 3710 | Meteorological Instruments and Observations (WRCO) | |
| PS 1120 | Cognitive Psychology Laboratory | |
| PS 3220 | Cognitive Psychology | |
| PY 3380 | Humans and Humanoids: Ethics in Technology (TECO) | |
| PY 3610 | Philosophy of Technology (INCO,TECO) | |
| TH 3300 | Design for the Theatre (Topics) | |
| TH 3310 | Theatre Technology: Topics | |
| GACO (https://coursecatalog.plymouth.edu/general-education/#GACO) | Global Awareness Connection | 3-4 |
| Electives | | 7-14 |
| Credits | | 24-33 |
| Total Credits | | 120 |

¹ Directions should total 20 credits (unless the major has a waiver for a specific Direction).