

Electrical Engineering and Artificial Intelligence Systems Engineering (Option M)

September 2023 (for students who started first year in 2022 or later)

<p>Year 2</p> <p>Term A</p> <p>NMM 2270a Applied Mathematics for Engineering II (Formerly AM 2270a)</p> <p>SE 2205a Algorithms and Data Structures</p> <p>SS 2141a Applied Probability and Statistics</p> <p>ECE 2277a Digital Logic Systems</p> <p>ECE 2240a Electrical Laboratory</p> <p>ECE 2205a Electric Circuits I</p> <p>Term B</p> <p>NMM 2276b Applied Mathematics for Elec & Mech Eng III (Formerly AM 2276B)</p> <p>SE 2251b Software Design for Systems Engineering</p> <p>Writing Building Better (Communication) Bridges: Rhetoric & Professional Communication for Engineers</p> <p>2130f/g</p> <p>ECE 2233b Circuits and Systems</p> <p>Year 3</p> <p>Term A</p> <p>DS 3000a Intro to Machine Learning</p> <p>SE 3309a Database Systems</p> <p>ECE 3350a Cyber-Physical Systems Theory</p> <p>ECE 3330a Control Systems</p> <p>ECE 3332a Electric Machines</p> <p>NMM 3415a Applied Math for Electrical Engineering</p> <p>Term B</p> <p>AISE 3010b Data Engineering and Machine Learning</p> <p>ECE 3351b Digital Systems and Signal Processing</p> <p>ECE 3333b Electric Power Systems I</p> <p>ECE 3375b Microprocessors and Microcomputers</p> <p>ECE 2231b Introduction to Electronics</p> <p>ECE 2242b Principles of Design in Electrical Engineering</p> <p>Year 4</p> <p>Term A</p> <p>AISE 3020a AI: Ethics, bias, and privacy</p> <p>AISE 4010a Deep Learning for Time Series Data</p> <p>SE 4430a Introduction to Computer Networking, Security & IoT Systems</p> <p>ECE 3337a Electronic Circuits</p> <p>One 0.5-credit non-technical elective from approved list</p> <p>0.5 credit from AISE technical electives (can be in term A or B)**</p> <p>Term B</p> <p>AISE 4020b Artificial Intelligence Systems Engineering Design I</p> <p>MME 2234b Heat Transfer and Dynamics</p> <p>ECE 3399b Principles and Practices of Design of Electronic Systems</p> <p>ECE 3370b Communication Electronics I</p> <p>ECE 3336b Electromagnetic Theory</p> <p>One 0.5-credit technical elective from approved list</p>	<p>NOTES:</p> <p>Non-technical Electives Please choose 1.0 credits (one 1.0-credit or two 0.5-credit courses) from the 1000 level and one 0.5-credit course from the 2000 (or higher) level.</p> <p>AISE Technical Electives (AISE TEs) A list of AI-based technical courses approved by the AISE program committee. The list consists of AI-based courses offered by the Faculty of Engineering and Faculty of Science at Western. The list will be updated every year.</p> <p>Technical Elective List: Some technical electives may not be offered in a given academic year. Consult the Department for accurate listing. Courses that do not appear on the list below require special permission from the Department.</p> <table border="1"> <tr> <td>Technical Electives:</td> <td></td> </tr> <tr> <td>ECE 3349A/B</td> <td>Introduction to VLSI</td> </tr> <tr> <td>ECE 3380A/B</td> <td>Advanced Digital Systems</td> </tr> <tr> <td>ECE 4430A/B</td> <td>Selected Topics in Electrical Engineering I</td> </tr> <tr> <td>ECE 4431A/B</td> <td>Selected Topics in Electrical Engineering II</td> </tr> <tr> <td>ECE 4432A/B</td> <td>Radiation and Propagation</td> </tr> <tr> <td>ECE 4433A/B</td> <td>Digital Communications Systems</td> </tr> <tr> <td>ECE 4436A/B</td> <td>Networking: Principles, Protocols and Architecture</td> </tr> <tr> <td>ECE 4438A/B</td> <td>Advanced Image Processing & Analysis</td> </tr> <tr> <td>ECE 4439A/B</td> <td>Conventional, Renewable & Nuclear Energy</td> </tr> <tr> <td>ECE 4445A/B</td> <td>Introduction to Digital Image Processing</td> </tr> <tr> <td>ECE 4451A/B</td> <td>Advanced Topics in Wireless Communications</td> </tr> <tr> <td>ECE 4455A/B</td> <td>Biomedical Systems Analysis</td> </tr> <tr> <td>ECE 4456A/B</td> <td>Power Systems Protection</td> </tr> <tr> <td>ECE 4457A/B</td> <td>Power Electronics</td> </tr> <tr> <td>ECE 4460A/B</td> <td>Real-Time Embedded Systems</td> </tr> <tr> <td>ECE 4464A/B</td> <td>Electric Power Systems II</td> </tr> <tr> <td>ECE 4468A/B</td> <td>Systems Optimization</td> </tr> <tr> <td>ECE 4469A/B</td> <td>Applied Control Systems</td> </tr> <tr> <td>MME 4452A/B</td> <td>Robotics and Manufacturing Automation</td> </tr> <tr> <td>MME 4473A/B</td> <td>Computer Integrated Manufacturing</td> </tr> <tr> <td>MME 4482A/B</td> <td>Fundamentals of MEMS</td> </tr> <tr> <td>MME 4487A/B</td> <td>Mechatronic System Design</td> </tr> </table> <p>AISE Technical Electives:</p> <table border="1"> <tr> <td>CompSci 4417A/B</td> <td>Unstructured Data</td> </tr> <tr> <td>SS 4861A/B</td> <td>Time Series</td> </tr> </table>	Technical Electives:		ECE 3349A/B	Introduction to VLSI	ECE 3380A/B	Advanced Digital Systems	ECE 4430A/B	Selected Topics in Electrical Engineering I	ECE 4431A/B	Selected Topics in Electrical Engineering II	ECE 4432A/B	Radiation and Propagation	ECE 4433A/B	Digital Communications Systems	ECE 4436A/B	Networking: Principles, Protocols and Architecture	ECE 4438A/B	Advanced Image Processing & Analysis	ECE 4439A/B	Conventional, Renewable & Nuclear Energy	ECE 4445A/B	Introduction to Digital Image Processing	ECE 4451A/B	Advanced Topics in Wireless Communications	ECE 4455A/B	Biomedical Systems Analysis	ECE 4456A/B	Power Systems Protection	ECE 4457A/B	Power Electronics	ECE 4460A/B	Real-Time Embedded Systems	ECE 4464A/B	Electric Power Systems II	ECE 4468A/B	Systems Optimization	ECE 4469A/B	Applied Control Systems	MME 4452A/B	Robotics and Manufacturing Automation	MME 4473A/B	Computer Integrated Manufacturing	MME 4482A/B	Fundamentals of MEMS	MME 4487A/B	Mechatronic System Design	CompSci 4417A/B	Unstructured Data	SS 4861A/B	Time Series
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Year 5

Term A

ECE 4450a Data Driven Control of Cyber-Physical Systems
ECE 4437a Communications Theory
AISE 4050 Artificial Intelligence Systems Engineering Design II
project

One 0.5-credit technical elective from approved list
One 0.5-credit technical elective from approved list
One 0.5-credit non-technical elective from approved list

Term B

AISE 4050 Artificial Intelligence Systems Engineering Design
ELI 4110G Engineering Ethics, Sustainable Development & the
Law

One 0.5-credit non-technical elective from approved list
One 0.5-credit technical elective from approved list
One 0.5-credit technical elective from approved list
0.5 credit from AISE technical electives (can be in term A or B)**