

Mechatronics System Engineering and Artificial Intelligence Systems Engineering (Option E)

September 2024 (for students who started first year in 2023 or later)

<p>Year 2</p> <p>Term A</p> <p>NMM 2270a Applied Mathematics for Engineering II AISE 2205a Algorithms and Data Structures SS 2141a Applied Probability and Statistics MSE 2212a Mechanics of Materials MSE 2214a Thermodynamics MSE 2200q Engineering Shop Safety Training</p> <p>Term B</p> <p>NMM 2276b Applied Mathematics for Elec & Mech Eng III AISE 2251b Software Design for Systems Engineering MSE 2213b Engineering Dynamics MSE 2273b Intro to heat transfer and fluid mechanics MSE 2221b Computational Methods in Mechatronic Systems Engineering Two 0.5 non-technical electives</p> <p>Year 3</p> <p>Term A</p> <p>DS 3000a Intro to Machine Learning AISE 3309a Database Systems AISE 3350a Cyber-Physical Systems Theory ECE 2205a Electric Circuits MSE 2201a Introduction to Electrical Instrumentation One 0.5 non-technical electives</p> <p>Term B</p> <p>AISE 3010b Data Engineering and Machine Learning AISE 3351b Digital Systems and Signal Processing MSE 2202b Intro to Mechatronic Design MSE 2233b Circuits and Systems (*) MSE 3360b Finite Element Methods for Mechatronic Systems Engineering Writing 2130g Building Better (Communication) Bridges: Rhetoric & Professional Communication for Engineers</p> <p>Year 4</p> <p>Term A</p> <p>AISE 4010a Deep Learning for Time Series Data AISE 4430a Introduction to Computer Networking, Security & IOT Systems ECE2277a Digital Logic Systems ECE 3330a Control Systems MSE 3381a Kinetics and Dynamics of Machines MSE 3310a Electric Motors and Drives</p> <p>Term B</p> <p>AISE 4020b Artificial Intelligence Systems Engineering Design I ECE 3375b Microprocessors and microcomputers MSE 3302b Sensors and Actuators ECE 4469b Applied Control Systems MSE 3380b Machine Component Design for Mechatronic Systems 0.5 credit from AISE technical electives (can be in term A or B)**</p>	<p>NOTES:</p> <p>Important: Students are responsible for ensuring they have the correct courses required for their degree. If you are unsure which courses you still need or if you see courses listed on the progression sheet that are no longer offered or are not offered in the term you see listed here, please contact your Academic Counsellor.</p> <p>*Non-technical Electives: Please choose a maximum of 1.0 credits (one 1.0 credit course or two 0.5 credit courses) from the 1000 level and a minimum of one 0.5 credit from the 2000 (or higher) level. http://www.eng.uwo.ca/undergraduate/upper_year/electives.html</p> <p>Technical Electives: ** AISE technical electives - refer to 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>Some technical electives may not be offered in a given academic year. Consult the Department for accurate listing.</p> <p>MSE Technical Electives</p> <table border="1"> <tr><td>ECE 3380A/B</td><td>Advanced Digital Systems</td></tr> <tr><td>ECE 4429A/B</td><td>Advanced Digital Signal Processing</td></tr> <tr><td>ECE 4438A/B</td><td>Advanced Image Processing and Analysis</td></tr> <tr><td>ECE 4445A/B</td><td>Introduction to Digital Image Processing</td></tr> <tr><td>ECE 4455A/B</td><td>Biomedical Systems Analysis</td></tr> <tr><td>ECE 4468A/B</td><td>Systems Optimization</td></tr> <tr><td>MME 4424A/B</td><td>Mechanical Properties of Materials</td></tr> <tr><td>MME 4425A/B</td><td>Mechanical Vibrations</td></tr> <tr><td>MME 4459A/B</td><td>Advanced CAE: Manufacturing Technologies</td></tr> <tr><td>MME 4469A/B</td><td>Biomechanics of the Musculoskeletal System</td></tr> <tr><td>MME 4470A/B</td><td>Medical and Assistive Devices</td></tr> <tr><td>MME 4473A/B</td><td>B Computer Integrated Manufacturing</td></tr> <tr><td>MME 4480A/B</td><td>Advanced CAE: Reverse Engineering</td></tr> <tr><td>MME 4482A/B</td><td>Fundamentals of MEMS</td></tr> <tr><td>MME 4492A/B</td><td>Production Management for Engineers</td></tr> <tr><td>ECE 3380A/B</td><td>Advanced Digital Systems</td></tr> <tr><td>ECE 4429A/B</td><td>Advanced Digital Signal Processing</td></tr> <tr><td>ECE 4438A/B</td><td>Advanced Image Processing and Analysis</td></tr> <tr><td>ECE 4445A/B</td><td>Introduction to Digital Image Processing</td></tr> <tr><td>ECE 4455A/B</td><td>Biomedical Systems Analysis</td></tr> <tr><td>ECE 4468A/B</td><td>Systems Optimization</td></tr> <tr><td>MME 4424A/B</td><td>Mechanical Properties of Materials</td></tr> <tr><td>MME 4425A/B</td><td>Mechanical Vibrations</td></tr> <tr><td>MME 4459A/B</td><td>Advanced CAE: Manufacturing Technologies</td></tr> <tr><td>MME 4469A/B</td><td>Biomechanics of the Musculoskeletal System</td></tr> <tr><td>MME 4470A/B</td><td>Medical and Assistive Devices</td></tr> <tr><td>MME 4473A/B</td><td>B Computer Integrated Manufacturing</td></tr> </table>	ECE 3380A/B	Advanced Digital Systems	ECE 4429A/B	Advanced Digital Signal Processing	ECE 4438A/B	Advanced Image Processing and Analysis	ECE 4445A/B	Introduction to Digital Image Processing	ECE 4455A/B	Biomedical Systems Analysis	ECE 4468A/B	Systems Optimization	MME 4424A/B	Mechanical Properties of Materials	MME 4425A/B	Mechanical Vibrations	MME 4459A/B	Advanced CAE: Manufacturing Technologies	MME 4469A/B	Biomechanics of the Musculoskeletal System	MME 4470A/B	Medical and Assistive Devices	MME 4473A/B	B Computer Integrated Manufacturing	MME 4480A/B	Advanced CAE: Reverse Engineering	MME 4482A/B	Fundamentals of MEMS	MME 4492A/B	Production Management for Engineers	ECE 3380A/B	Advanced Digital Systems	ECE 4429A/B	Advanced Digital Signal Processing	ECE 4438A/B	Advanced Image Processing and Analysis	ECE 4445A/B	Introduction to Digital Image Processing	ECE 4455A/B	Biomedical Systems Analysis	ECE 4468A/B	Systems Optimization	MME 4424A/B	Mechanical Properties of Materials	MME 4425A/B	Mechanical Vibrations	MME 4459A/B	Advanced CAE: Manufacturing Technologies	MME 4469A/B	Biomechanics of the Musculoskeletal System	MME 4470A/B	Medical and Assistive Devices	MME 4473A/B	B Computer Integrated Manufacturing
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Year 5

Term A

AISE 4050 Artificial Intelligence Systems Engineering Design II (capstone)

AISE 4450a Data Driven Control of Cyber-Physical Systems

AISE 3020A AI: Ethics, Bias and Privacy

MSE 3301A Materials Selection and Manufacturing Processes

MSE 4401a Robotic Manipulators

One 0.5 credit technical elective

Term B

AISE 4050 Artificial Intelligence Systems Engineering Design II (capstone)

ECE 4460B Real Time and Embedded Systems

ELI 4110F Engineering Ethics, Sustainable Development & the Law

Two 0.5-credit technical elective

One 0.5 credit from AISE technical electives (can be in term A or B)**

AISE Technical Electives

ECE4445A/B	Introduction to Digital Image Processing
ECE 4438A/B	Advanced Image Processing and Analysis
SE 4455A/B	Cloud Computing
CS3340A/B	Analysis Of Algorithms I
CS 4417A/B	Unstructured Data
SS 4861A/B	Time Series