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

September 2023 (for students who started first year in 2021 or later)

Year 2
Term A

NMM 2270a	Applied Mathematics for Engineering II (Formerly AM 2270a)
SE 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
	0.5 non-technical elective

Term B

NMM 2276b	Applied Mathematics for Elec & Mech Eng III (Formerly AM 2276B)
SE 2251b	Software Design for Systems Engineering
Writing 2130f/g	Building Better (Communication) Bridges: Rhetoric & Professional Communication for Engineers
MSE 2213b	Engineering Dynamics
MSE 2273b	Intro to heat transfer and fluid mechanics
	0.5 non-technical elective

Year 3
Term A

DS 3000a	Intro to Machine Learning
SE 3309a	Database Systems
ECE 3350a	Cyber-Physical Systems Theory
ECE 2205A	Electric Circuits
MSE 2201A	Introduction to Electrical Instrumentation
AM 3415A	Applied Math for Electrical Engineering

Term B

AISE 3010b	Data Engineering and Machine Learning
ECE 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
MSE 3380B	Machine Component Design for Mechatronic Systems

Year 4
Term A

AISE 4010a	Deep Learning for Time Series Data
SE 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

Term B

AISE 4020b	Artificial Intelligence Systems Engineering Design I
ECE 3375B	Microprocessors and microcomputers
MSE 3302B	Sensors and Actuators
ECE 4469B	Applied Control Systems
	0.5 non-technical elective
	0.5 credit from AISE technical electives (can be in term A or B)**

NOTES:

Non-technical Electives

https://www.eng.uwo.ca/undergraduate/upper-year/electives.html

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.

Computer Science 4417A/B	Unstructured Data
Statistical Science 4861A/B	Time Series

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.

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

AISE Technical Electives:

CompSci 4417A/B	Unstructured Data
Statistical Science 4861A/B	Time Series

Year 5
Term A
AISE 3020a	AI: Ethics, bias and privacy
ECE 4450a	Data Driven Control of Cyber-Physical Systems
MSE 4401a	Robotic Manipulators
MSE 3301A	Materials Selection and Manufacturing Processes
	0.5 credit technical elective
AISE 4050	Artificial Intelligence Systems Engineering Design II (capstone)

Term B
ES 4498G	Engineering Ethics, Sustainable Development and the Law
ECE 4460B	Real Time and Embedded Systems
AISE 4050	Artificial Intelligence Systems Engineering Design II (capstone)

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

The official version of the academic calendar can be found at: www.westerncalendar.uwo.ca