

## H. CIVIL ENGINEERING AND ARTIFICIAL INTELLIGENCE SYSTEMS ENGINEERING, SMART CITIES AND STRUCTURAL ENGINEERING OPTION H

**September 2024** (students who entered *first year* in September 2021 or later)

<p><b>Year 2:</b></p> <p><b>Term A</b></p> <table border="1"> <tr><td>CEE 2202A</td><td>Mechanics of Materials</td></tr> <tr><td>CEE 2217A</td><td>Introduction to Environmental Engineering</td></tr> <tr><td>CEE 2220A</td><td>Introduction to Structural Engineering</td></tr> <tr><td>SE 2205A</td><td>Algorithms &amp; Data Structure for Object-Oriented Design</td></tr> <tr><td>NMM 2270A</td><td>Applied Math for Engineering II</td></tr> <tr><td>SS 2141A</td><td>Applied Probability and Statistics for Engineers</td></tr> </table> <p><b>Term B</b></p> <table border="1"> <tr><td>CEE 2219B</td><td>Computation Tools for Civil Engineers</td></tr> <tr><td>CEE 2221B</td><td>Structural Theory and Design</td></tr> <tr><td>NMM 2276B</td><td>Applied Mathematics for Electrical and Mechanical Engineers</td></tr> <tr><td>SE 2251B</td><td>Software Design for Systems Engineering</td></tr> <tr><td>Writing 2130g</td><td>Building Better (Communication) Bridges: Rhetoric &amp; Professional Communication for Engineers</td></tr> <tr><td colspan="2">0.5 non-technical elective</td></tr> </table> <p><b>Year 3:</b></p> <p><b>Term A</b></p> <table border="1"> <tr><td>CEE 2224</td><td>Engineering Fluid Mechanics</td></tr> <tr><td>CEE 4401A</td><td>Principles of Transportation Engineering</td></tr> <tr><td>DS 3000A</td><td>Introduction to Machine Learning</td></tr> <tr><td>ECE 3350A</td><td>Cyber-Physical Systems Theory</td></tr> <tr><td>SE 3309A</td><td>Database Management Systems</td></tr> <tr><td>SE 4430A</td><td>Introduction to Computer Networking, Security &amp; IOT Systems</td></tr> </table> <p><b>Term B</b></p> <table border="1"> <tr><td>AISE 3010B</td><td>Data Engineering and Machine Learning</td></tr> <tr><td>CEE 2224</td><td>Engineering Fluid Mechanics</td></tr> <tr><td>CEE 4412B</td><td>Intelligent Transportation Systems</td></tr> <tr><td>EarthSci 2281b</td><td>Geology for Engineers</td></tr> <tr><td>ECE 3351B</td><td>Digital Systems and Signal Processing</td></tr> <tr><td colspan="2">0.5 non-technical elective</td></tr> </table> <p><b>Year 4:</b></p> <p><b>Term A</b></p> <table border="1"> <tr><td>CEE 3321A</td><td>Soil Mechanics &amp; Hydrogeologic Engineering</td></tr> <tr><td>CEE 3340A</td><td>Analysis of Indeterminate Structures</td></tr> <tr><td>CEE 3347A</td><td>Reinforced Concrete Design</td></tr> <tr><td>CEE 3348A</td><td>Project Management &amp; Engineering Cases</td></tr> <tr><td>CEE 3369A</td><td>Materials for Civil Engineering</td></tr> <tr><td>AISE 4010A</td><td>Deep Learning for Time Series Data</td></tr> <tr><td>AISE 3020A</td><td>AI: Ethics, Bias &amp; Privacy</td></tr> </table>	CEE 2202A	Mechanics of Materials	CEE 2217A	Introduction to Environmental Engineering	CEE 2220A	Introduction to Structural Engineering	SE 2205A	Algorithms & Data Structure for Object-Oriented Design	NMM 2270A	Applied Math for Engineering II	SS 2141A	Applied Probability and Statistics for Engineers	CEE 2219B	Computation Tools for Civil Engineers	CEE 2221B	Structural Theory and Design	NMM 2276B	Applied Mathematics for Electrical and Mechanical Engineers	SE 2251B	Software Design for Systems Engineering	Writing 2130g	Building Better (Communication) Bridges: Rhetoric & Professional Communication for Engineers	0.5 non-technical elective		CEE 2224	Engineering Fluid Mechanics	CEE 4401A	Principles of Transportation Engineering	DS 3000A	Introduction to Machine Learning	ECE 3350A	Cyber-Physical Systems Theory	SE 3309A	Database Management Systems	SE 4430A	Introduction to Computer Networking, Security & IOT Systems	AISE 3010B	Data Engineering and Machine Learning	CEE 2224	Engineering Fluid Mechanics	CEE 4412B	Intelligent Transportation Systems	EarthSci 2281b	Geology for Engineers	ECE 3351B	Digital Systems and Signal Processing	0.5 non-technical elective		CEE 3321A	Soil Mechanics & Hydrogeologic Engineering	CEE 3340A	Analysis of Indeterminate Structures	CEE 3347A	Reinforced Concrete Design	CEE 3348A	Project Management & Engineering Cases	CEE 3369A	Materials for Civil Engineering	AISE 4010A	Deep Learning for Time Series Data	AISE 3020A	AI: Ethics, Bias & Privacy	<p><b>NOTES:</b></p> <p>Note: CEE 3324a (Surveying). Offered each August (10 days) and must be completed before a student may graduate.</p> <p><b>Important:</b></p> <p>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><b>Non-technical Electives:</b></p> <p><a href="http://www.eng.uwo.ca/undergraduate/upper_year/electives.html">http://www.eng.uwo.ca/undergraduate/upper_year/electives.html</a></p> <p><b>Technical Elective List:</b></p> <p>Some technical electives may not be offered in a given academic year. Consult the Academic Timetable for a current listing.</p> <table border="1"> <tr><td>CEE 3355A/B</td><td>Municipal Engineering Design</td></tr> <tr><td>CEE 4414 A/B</td><td>Machine Learning for Water Resources</td></tr> <tr><td>CEE 4417A/B</td><td>Smart Buildings</td></tr> <tr><td>CEE 4428A/B</td><td>Selected Topics in Civil Engineering I</td></tr> <tr><td>CEE 4429A/B</td><td>Selected Topics in Civil Engineering II</td></tr> <tr><td>CEE 4438A/B</td><td>Introduction to Wood Design</td></tr> <tr><td>CEE 4440</td><td>Civil Engineering Thesis (full year course - count as two technical electives)</td></tr> <tr><td>CEE 4458A/B</td><td>Risk Analysis and Decision Making in Engineering</td></tr> <tr><td>CEE 4459A/B</td><td>Design of Lateral Load Structural Systems</td></tr> <tr><td>CEE 4465A/B</td><td>Environmental Design for Waste Disposal</td></tr> <tr><td>CEE 4476A/B</td><td>Environmental Hydraulics Design</td></tr> <tr><td>CEE 4480A/B</td><td>Wind Engineering: Modelling, Assessment and Mitigation</td></tr> <tr><td>CEE 4485A/B</td><td>Cities: Resilience and Sustainability</td></tr> <tr><td>EarthSci 3340A/B</td><td>Watershed Hydrology</td></tr> <tr><td>EarthSci 4440A/B</td><td>Hydrogeology: Principles, Processes, and Professional Practice</td></tr> </table>	CEE 3355A/B	Municipal Engineering Design	CEE 4414 A/B	Machine Learning for Water Resources	CEE 4417A/B	Smart Buildings	CEE 4428A/B	Selected Topics in Civil Engineering I	CEE 4429A/B	Selected Topics in Civil Engineering II	CEE 4438A/B	Introduction to Wood Design	CEE 4440	Civil Engineering Thesis (full year course - count as two technical electives)	CEE 4458A/B	Risk Analysis and Decision Making in Engineering	CEE 4459A/B	Design of Lateral Load Structural Systems	CEE 4465A/B	Environmental Design for Waste Disposal	CEE 4476A/B	Environmental Hydraulics Design	CEE 4480A/B	Wind Engineering: Modelling, Assessment and Mitigation	CEE 4485A/B	Cities: Resilience and Sustainability	EarthSci 3340A/B	Watershed Hydrology	EarthSci 4440A/B	Hydrogeology: Principles, Processes, and Professional Practice
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**Term B**

CEE 3322B	Introduction to Geotechnical Engineering
CEE 3343B	Finite Element Methods & Application to Lateral Analysis of Buildings
CEE 3344B	Structural Dynamics I
CEE 3346B	Steel Design
CEE 3358B	Reinforced & Prestressed Concrete Design

**Year 5:**

**Term A**

CEE 4420A or AISE 4020A	Data Science in Geotechnical Engineering or Artificial Intelligence Systems Engineering Design I
CEE 4413a	Building Information Modelling
CEE 4426a	Geotechnical Engineering Design
CEE 4491a	Structural Dynamics II
AISE 4050	Artificial Intelligence Systems Engineering Design
ECE 4450a	Data Driven Control of Cyber-Physical Systems

**Term B**

CEE 4415B	Structural Health Monitoring
CEE 4478b	Case Studies in Civil Engineering
ELI 4110G	Engineering Ethics, Sustainable Development and the Law
AISE 4050	Artificial Intelligence Systems Engineering Design
0.5 technical elective	
0.5 non-technical elective	