I	Introduced
D	Developed
A	Applied

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1A	CIVE 100	Civil Engineering Concepts											I						I													I	I						I	I									
	CIVE 104	Mechanics 1			I	I			I	I	I										I				I	I									I		I							I				
	CIVE 115	Linear Algebra		I					I						I						I																											
	MATH 116	Calculus 1 for Engineering		I					I						I						I																											
	CHE 102	Chemistry for Engineers			I					I																												I	I									
	ENGL 191	Communication in the Engineering Profession																										I	I	I																	
1B	CIVE 105	Mechanics 2			I	D			I												I		I																									
	CIVE 121	Computational Methods		D		I			I	I	I			I								I																										
	CIVE 123	Electrical Circuits and Instrumentation		I		I	I		I	I			I								I		I																									
	CIVE 153	Earth Engineering			I	I	I		I	I	I			I	I		I	I				I	I		I				I	I		I	I		I	I		I	I				I	I		I		
	CIVE 199	Seminar																																														
	MATH 118	Calculus 2 for Engineering		D					I						I																																	
	COOP 1																																															
	PD 19	Tactics for Workplace Success1																							I					I															I	I	I
2A	CIVE 204	Solid Mechanics 1				D			D	D							D		D		D		D		D	D			D																			
	CIVE 221	Advanced Calculus		D					I	I																																						
	CIVE 224	Probability & Statistics		D		I			D		I		D										D																						I		I
	CIVE 241	Transport Principles and Applications					I		D										I										D								I										
	CIVE 265	Structure and Properties of Materials			D									D	D								D		D	I			D	D							I										
	CIVE 298	Seminar																																														
	COOP 2																																															
	PD 20	Engineering Workplace Skills I: Developing Reasoned Conclusions																												I										I	I				I	I	I
2B	CIVE 205	Solid Mechanics 2				D			D	D				I	D		D	D	D		I		I		D	D			D																	D	
	CIVE 222	Differential Equations		D					I	I	I				D																																	
	CIVE 230	Engineering and Sustainable Development			D		I								D														D	D			D				D				D					D	
	CIVE 280	Fluid Mechanics			D	D	D		D	D	D		D	D	D		D					I	D		D	D			D																		
	CIVE 299	Seminar																																														
	CIVE 392	Economics and Life Cycle Cost Analysis											D																					D						D	D				D			
	COOP 3																																															
	PD E1	Enginnering Workplace Skills Elective 1 (PD 3,4,5,6,7)																																														
3A	CIVE 303	Structural Analysis		A			D		D	D	D																																					
	CIVE 332	Civil Systems and Project Management				D	A						A						D																									D					
	CIVE 341	Transportation Engineering Applications								A														A						A							D									D		
	CIVE 353	Geotechnical Engineering 1			A	D	I			I	I			D	I						D	D	I		D	D								D														
	CIVE 382	Hydrology and Open Channel Flow			A	D	D		A	A	I		I	D	I						D	I	I		A												I											D
	CIVE 398	Seminar																																														
	CSE 1	Complementary Studies Elective 1																																														
	WKRPT 200	Work-term Report				I																							I																			
	COOP 4																																															
	PD E2	Enginnering Workplace Skills Elective 2 (PD 3,4,5,6,7)																																														
3B	CIVE 310	Introduction to Structural Design				A				D	D											A													D													
	CIVE 375	Environmental Engineering Principles							A		A			A	A													D									A											
	CIVE 399	Seminar																																														
	TE 1	Technical Elective 1																																														
	TE 2	Technical Elective 2																																														
	CSE 2 or TE 3	Complementary Studies Elective 2 or Technical Elective 3																																														
	WKRPT 300	Work-term Report				D																							D																			
	COOP 5																																															
	PD E3	Enginnering Workplace Skills Elective 3 (PD 3,4,5,6,7)																																														

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4A	CIVE 400	Civil Engineering Design Project 1															A	A							A	A		A					A														A	A	
	CIVE 491	Engineering Law and Ethics																														A	A						A	A	A								
	CIVE 498	Seminar																																															
	TE 3 or CSE 2	Technical Elective 3 or Complementary Studies Elective 2																																															
	TE 4	Technical Elective 4																																															
	CSE 3 or TE 5	Complementary Studies Elective 3 or Technical Elective 5																																															
	WKRPT 400	Work-term Report				A																							A																				
	COOP 6																																																
4B	CIVE 401	Civil Engineering Design Project 2																	A		A								A	A																		A	A
	CIVE 499	Seminar																																															
	CSE 3 or TE 5	Complementary Studies Elective 3 or Technical Elective 5																																															
	TE 6	Technical Elective 6																																															
	TE 7	Technical Elective 7																																															
	TE 8	Technical Elective 8																																															

Technical Electives

List A - Engineering Design Intensive Technical Electives

Terms	Course Number	Course Name	1.Knowledge Base	1a. Demonstrate understanding of concepts in mathematics	1b. Demonstrate understanding of concepts in natural science	1c. Demonstrate understanding of engineering fundamentals	1d. Demonstrate understanding of specialized engineering knowledge	2. Problem Analysis	2a. Formulate a problem statement	2b. Develop models to solve engineering problems including identifying approximations, assumptions and constraints	2c. Critically evaluate solutions of engineering problems	3. Investigation	3a. Create investigative studies of complex engineering problems	3b. Gather information from relevant sources to address complex engineering problems	3c. Synthesize information from multiple sources to reach to reach valid conclusions	4. Design	4a. Define design requirements and specifications for complex, open-ended engineering problems	4b. Critically evaluate and compare design choices	4c. Generate and refine potential solutions to complex, open-ended design problems	5. Use of Engineering Tools	5a. Select appropriate engineering tools, considering their limitations	5b. Modify and/or create appropriate engineering tools, identifying their limitations	5c. Use engineering tools appropriately	6. Individual and Team Work	6a. Contribute as an active team member or leader to complete individual tasks	6b. Collaborate with others to complete tasks effectively as a team	7. Communication Skills	7a. Orally present information within the profession and to society at large	7b. Communicate in a written format within the profession and to society at large	7c. Interpret information, including instructions	8. Professionalism	8a. Articulate the roles and responsibilities of the professional engineer in society with reference to the protection of the public and its interest	8b. Describe the importance of codes, standards, best practices, laws, and regulations within engineering	9. Impact of Engineering	9a. Identify the relevance of and uncertainty associated with the different aspects (social, cultural, economic, health, safety, legal, environmental), of an engineering project	9b. Analyze the social, health, safety, and environmental aspects of an engineering project, incorporating sustainability considerations and environmental stewardship in making decisions	10. Ethics & Equity	10a. Identify ethical and unethical behavior in professional situations	10b. Identify how an engineer is accountable to multiple stakeholders in engineering practice	10c. Identify equitable and inequitable situations or behaviors	11. Economics & Project Management	11a. Apply project management techniques and other business practices in engineering projects, with attention to risk and change	11b. Perform economic analyses of engineering projects with attention to uncertainty and limitations	12. Life-long Learning	12a. Identify gaps in their knowledge, skills and abilities	12b. Obtain and evaluate information or training from appropriate sources	12c. Reflect on the use of information or training received
F	CIVE 343	Traffic Simulation Modelling and Applications																																															
F	CIVE 354	Geotechnical Engineering 2			I		A		D	I	I			D	I			D			D	D	I		A	A						D	D		D													
S	CIVE 413	Structural Steel Design		A	A		A			A	A						A	A	A		A		A							A			A															
S	CIVE 414	Structural Concrete Design				A	A			A	A			A			A	A	A							A				A			A													A	A	A
W	CIVE 415	Structural System Design				A	A						A				A	A			A					A				A			A													A		
W	CIVE 460	Engineering Biomechanics				D									A													A	A					A				D	D									
F,W,S	CIVE 495	Design Intensive Special Topics in Civil Engineering				A	A			A			A	A	A				A		A		A						A				A		A	A												A
W	CIVE 512	Rehabilitation of Structures					A						A				A	A			A					A				A			A													A		
W	CIVE 542	Pavement Structural Design																																															
W	CIVE 554	Geotechnical Engineering 3				A			A	A	A		A	A	A		A		A		A	A	A						A			A	A		A	A						A	A		A	A	A
W	CIVE 583	Design of Urban Water Systems																																															
S	CIVE 596	Construction Engineering								A									A											A			A		A						A	A						
W	EARTH 438	Engineering Geology				A							D	A	A							A						D	A			D	D		D	D						D						
W	ENVE 577	Engineering for Solid Waste Management																																															
F	SYDE 533	Conflict Resolution																																															

List B - Technical Electives

Terms	Course Number	Course Name	1.Knowledge Base	1a. Demonstrate understanding of concepts in mathematics	1b. Demonstrate understanding of concepts in natural science	1c. Demonstrate understanding of engineering fundamentals	1d. Demonstrate understanding of specialized engineering knowledge	2. Problem Analysis	2a. Formulate a problem statement	2b. Develop models to solve engineering problems including identifying approximations, assumptions and constraints	2c. Critically evaluate solutions of engineering problems	3. Investigation	3a. Create investigative studies of complex engineering problems	3b. Gather information from relevant sources to address complex engineering problems	3c. Synthesize information from multiple sources to reach to reach valid conclusions	4. Design	4a. Define design requirements and specifications for complex, open-ended engineering problems	4b. Critically evaluate and compare design choices	4c. Generate and refine potential solutions to complex, open-ended design problems	5. Use of Engineering Tools	5a. Select appropriate engineering tools, considering their limitations	5b. Modify and/or create appropriate engineering tools, identifying their limitations	5c. Use engineering tools appropriately	6. Individual and Team Work	6a. Contribute as an active team member or leader to complete individual tasks	6b. Collaborate with others to complete tasks effectively as a team	7. Communication Skills	7a. Orally present information within the profession and to society at large	7b. Communicate in a written format within the profession and to society at large	7c. Interpret information, including instructions	8. Professionalism	8a. Articulate the roles and responsibilities of the professional engineer in society with reference to the protection of the public and its interest	8b. Describe the importance of codes, standards, best practices, laws, and regulations within engineering	9. Impact of Engineering	9a. Identify the relevance of and uncertainty associated with the different aspects (social, cultural, economic, health, safety, legal, environmental), of an engineering project	9b. Analyze the social, health, safety, and environmental aspects of an engineering project, incorporating sustainability considerations and environmental stewardship in making decisions	10. Ethics & Equity	10a. Identify ethical and unethical behavior in professional situations	10b. Identify how an engineer is accountable to multiple stakeholders in engineering practice	10c. Identify equitable and inequitable situations or behaviors	11. Economics & Project Management	11a. Apply project management techniques and other business practices in engineering projects, with attention to risk and change	11b. Perform economic analyses of engineering projects with attention to uncertainty and limitations	12. Life-long Learning	12a. Identify gaps in their knowledge, skills and abilities	12b. Obtain and evaluate information or training from appropriate sources	12c. Reflect on the use of information or training received
F	CIVE 306	Mechanics of Solids 3																																															
W	CIVE 422	Finite Element Analysis		A	A	A	A		A	A												A	A			A			A	A																		
W	CIVE 440	Transit Planning and Operations																																															
S	CIVE 484	Physical Infrastructure Planning							A	A	A				A			A	A						A	A		A	A			A	A		A	A		A	A	A		A	A		A		
F,W,S	CIVE 497	Special Topics in Civil Engineering																																															
S	CIVE 505	Structural Dynamics		A			A			A			A						A			A								A					A											A		A
W	CIVE 507	Building Science and Technology					A		A	A	A			A					A		A					A							A															
F	EARTH 444	Applied Wetland Science																																															
F,S	EARTH 458	Physical Hydrogeology		A	D				D		D										I		I																I			D	D						
F	ENVE 277	Air Quality Engineering				D	D																													D			D									
F	ENVE 279	Energy and the Environment			D	D	D		D	D	I			I			I	I							I													I	I									
W	ENVE 376	Biological Processes				A	D				A			A			A		A																														
W	ENVE 383	Advanced Hydrology and Hydraulics				D	A		A	A															A	A																							
W	ENVE 573	Contaminant Transport																																															
W,S	GEOG 209	Hydroclimatology																																															
F	GEOG 305	Fluvial Geomorphology																																															
F	GEOG 371	Advanced Remote Sensing Techniques																																															
W,S	GEOG 381	Advanced Geographic Information Systems																																															
F,S	ME 559	Finite Element Methods																																															
W	PLAN 416	Modelling the City																																															
W	PLAN 477	Freight Planning and Policy																																															

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F,W	**BIOL 130**	**Introductory Cell Biology**																																													
F	**BIOL 150**	**Organismal and Evolutionary Ecology**																																													
F	**BIOL 240**	**Fundamentals of Microbiology**			D										D															D														D	D	D
F,W,S	**BIOL 273**	**Principles of Human Physiology 1**																																													
W,S	**CHE 161**	**Engineering Biology**				I																												I		I								I	I	
F	**CHEM 209**	**Introductory Spectroscopy and Structure**																																													
F,W	**CHEM 262**	**Organic Chemistry for Engineering**			D	D				D																																		D	D	
W,S	**EARTH 221**	**Introductory Geochemistry**																																													
W	**EARTH 270**	**Disasters and Natural Hazards**																																													
W	**EARTH 281**	**Geological Impacts on Human Health**																																													
F,W,S	**ENVS 200**	**Field Ecology**																																													
W	**KIN 100**	**Regional Human Anatomy**			I																							I	I	I															I
W	**KIN 100L**	**Regional Human Anatomy Laboratory**																																													
W	**SCI 207**	**Physics, the Universe, and Everything**																																													
F,W,S	**SCI 238**	**Introductory Astronomy**																																													