

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

			I D A	Introduced Developed Applied
Terms	Course Number	Course Name		
List C - Natural Science Technical Electives				
F,W	BIOL 130	Introductory Cell Biology		
F	BIOL 150	Organismal and Evolutionary Ecology		
F	BIOL 240	Fundamentals of Microbiology	D	
F,W,S	BIOL 273	Principles of Human Physiology 1		
W,S	CHE 161	Engineering Biology	I	
F	CHEM 209	Introductory Spectroscopy and Structure		
F,W	CHEM 262	Organic Chemistry for Engineering	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	
W	KIN 100L	Regional Human Anatomy Laboratory		
W	SCI 207	Physics, the Universe, and Everything		
F,W,S	SCI 238	Introductory Astronomy		
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 model 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	D	
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	I	
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	I	
		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	D	D D
		12c. Reflect on the use of information or training received		