I	Introduced
D	Developed
A	Applied

Term	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
1A	GEOE 100	Environmental and Geological Engineering Concepts							I				I	I	I				I		I	I			I				I			I	I						I	I		I	I					
	GEOE 115	Linear Algebra		I					I						I						I																											
	CIVE 104	Mechanics 1			I	I			I	I	I										I				I	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																	
	COOP 1																																														
	PD 19	Tactics for Workplace Success																							I					I														I	I	I
1B	GEOE 121	Computational Methods		D		I			I	I	I			I								I																									
	GEOE 123	Electrical Circuits and Instrumentation		I		I	I		I	I			I								I		I																								
	GEOE 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	
	CIVE 105	Mechanics 2			I	D			I												I		I																								
	MATH 118	Calculus 2 for Engineering		D					I						I																																
	COOP 2																																														
	PD 20	Engineering Workplace Skills I: Developing Reasoned Conclusions																																													
2A	GEOE 223	Differential Equations and Balance Laws		D					I	I					D																																
	GEOE 224	Probability & Statistics		D		I			D		I		D										D																						I		I
	GEOE 280	Fluid Mechanics			D	D	D		D	D	I		D	D	D		D					I	D		D	D			D																		
	EARTH 238	Introductory Structural Geology			D	I	I			D					I								D																								
	GEOE 298	Seminar																																													
	CSE 1	Complementry Studies Elective 1																																													
	COOP 3																																														
	PD E1	Engineering Workplace Skills Elective 1																																													
2B	GEOE 221	Advanced Calculus		D					I	I																																					
	CIVE 204	Solid Mechanics 1				D			D	D							D		D		D		D		D	D			D																		
	EARTH 231	Mineralogy			D				I	I				I	I								I		I	I		I	D	I																D	
	EARTH 235	Stratigraphic Approaches to Understanding Earth's History			D	I															D		D		D	D																			D		D
	EARTH 260	Introductory Applied Geophysics		I	I	D									I						D	D	D						D	D																	
	WKRPT 200	Work-term Report				I																							I																		
	GEOE 299	Seminar																																													
	CSE 2	Complementry Studies Elective 2																																													
	COOP 4																																														
	PD E2	Engineering Workplace Skills Elective 2																																													
3A	GEOE 353	Geotechnical Engineering 1			A	D	I			I	I			D	I						D	D	I		D	D							D														
	GEOE 392	Economics and Life Cycle Cost Analysis				D	I		A	I	A		D		A						A	A	A										D				I	D		D	D	I		D	D				
	EARTH 232	Introductory Petrography			D									I	D							D	I		I	D		I	I	I																	
	EARTH 458	Physical Hydrogeology		A	D				D		D										I		I															I			D	D						
	EARTH 458L	Filed Methods in Hydrogeology			D	D				A				D	D						A	A	A		D	D			A	D							D	D										
	WKRPT 300	Work-term Report				D																							D																		
	GEOE 398	Seminar																																													
	TE 1	Technical Elective 1																																													
	COOP 5																																														
	PD E3	Engineering Workplace Skills Elective 3																																													
3B	ENVE 382	Hydrology and Open Channel Flow			D	D	D		A	A	I		I	D	I						D	I	I		D												I										D
	EARTH 333	Introductory Sedimentology			A										D						D		D		D					D				I													
	EARTH 390	Methods in Geological Mapping				D																	A		D	D		D	D	A		D	D			D											
	EARTH 437	Rock Mechanics				A							D	A	A						D	A							A			D	D			D	D										
	EARTH 438	Engineering Geology				A							D	A	A							A						D	A			D	D			D	D						D				
	GEOE 399	Seminar																																													
	CSE 3	Complementry Studies Elective 3																																													
	COOP 6																																														

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4A	GEOE 354	Geotechnical Engineering 2			I		A		D	I	I			D	I			D			D	D	I		A	A						D	D		D														
	GEOE 400	Geological Engineering Design Project 1							A	A	A		A	A	A		A	A	A						A	A		A	A			A	A		A	A						A	A		A	A	A		
	WKRPT 400	Work-term Report				A																							A																				
	GEOE 498	Seminar																																															
	TE 2	Technical Elective 2																																															
	TE 3	Technical Elective 3																																															
	TE 4	Technical Elective 4																																															
4B	GEOE 391	Law and Ethics for Environmental and Geological Engineers																														A	A						A	A	A								
	GEOE 401	Geological Engineering Design Project 2									A		A	A	A		A	A	A		A	A	A		A	A		A	A	A		A	A		A	A						A	A		A	A	A		
	GEOE 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		
	GEOE 499	Seminar																																															
	TE 5	Technical Elective 5																																															
	TE 6	Technical Elective 6																																															

Technical Electives

3A - Technical Elective List

Course Number	Course Name	1.Knowledge Base	1a.	1b.	1c.	1d.	2.	2a.	2b.	2c.	3.	3a.	3b.	3c.	4.	4a.	4b.	4c.	5.	5a.	5b.	5c.	6.	6a.	6b.	7.	7a.	7b.	7c.	8.	8a.	8b.	9.	9a.	9b.	10.	10a.	10b.	10c.	11.	11a.	11b.	12.	12a.	12b.	12c.
CIVE 205	Solid Mechanics 2				D			D	D				I	D		D	D	D		I		I		D	D			D																	D	
EARTH 221	Introductory Geochemistry																																													

4A - Technical Elective List

Course Number	Course Name	1.Knowledge Base	1a.	1b.	1c.	1d.	2.	2a.	2b.	2c.	3.	3a.	3b.	3c.	4.	4a.	4b.	4c.	5.	5a.	5b.	5c.	6.	6a.	6b.	7.	7a.	7b.	7c.	8.	8a.	8b.	9.	9a.	9b.	10.	10a.	10b.	10c.	11.	11a.	11b.	12.	12a.	12b.	12c.
CHE 514	Fundamentals of Petroleum Production																																													
CIVE 306	Mechanics of Solids 3																																													
CIVE 310	Introduction to Structural Design				A				D	D											A											D														
CIVE 375	Environmental Engineering Principles							A		A			A	A													D							A												
EARTH 331	Volcanology and Igneous Petrology																																													
EARTH 342	Geomorphology and GIS Applications																																													
EARTH 421	Advanced Geochemistry																																													
EARTH 440	Quaternary Geology																																													
EARTH 444	Applied Wetland Science																																													
EARTH 461	Near-Surface Geophysics																																													
GEOE 495	Design Intensive Special Topics in Geological Engineering																																													
GEOE 497	Special Topics in Geological Engineering																																													
ME 559	Finite Element Methods																																													

4B - Technical Elective List

Course Number	Course Name	1.Knowledge Base	1a.	1b.	1c.	1d.	2.	2a.	2b.	2c.	3.	3a.	3b.	3c.	4.	4a.	4b.	4c.	5.	5a.	5b.	5c.	6.	6a.	6b.	7.	7a.	7b.	7c.	8.	8a.	8b.	9.	9a.	9b.	10.	10a.	10b.	10c.	11.	11a.	11b.	12.	12a.	12b.	12c.
CIVE 303	Structural Analysis		A			D		D	D	D																																				
CIVE 332	Civil Systems and Project Management				D	A						A						D																							D					
CIVE 422	Finite Element Analysis		A	A	A	A		A	A												A	A			A			A	A																	
CIVE 460	Engineering Biomechanics				D									A													A	A						A				D	D							
CIVE 507	Building Science and Technology					A		A	A	A			A					A		A					A							A														
CIVE 542	Pavement Structural Design																																													
EARTH 332	Metamorphic Petrology																																													
EARTH 435	Advanced Structural Geology																																													
EARTH 439	Flow and Transport Through Fractured Rocks																																													
EARTH 444	Applied Wetland Science																																													
EARTH 456	Numerical Methods in Hydrogeology																																													
EARTH 459	Chemical Hydrogeology																																													
EARTH 460	Geophysical Data Analysis																																													
EARTH 471	Mineral Deposits																																													
ENVE 383	Advanced Hydrology and Hydraulics				D	A		A	A															A	A																					
ENVE 573	Contaminant Transport																																													
ENVE 577	Engineering for Solid Waste Management																																													
ENVE 583	Design of Urban Water Systems																																													
GEOE 495	Design Intensive Special Topics in Geological Engineering																																													
GEOE 497	Special Topics in Geological Engineering																																													