<table>
<thead>
<tr>
<th>Terms</th>
<th>Course Number</th>
<th>Course Name</th>
<th>Course Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ENVE 100</td>
<td>Environmental and Geological Engineering Concepts</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>MATH 116</td>
<td>Calculus I</td>
<td>I</td>
</tr>
<tr>
<td></td>
<td>CIVE 115</td>
<td>Linear Algebra</td>
<td>I</td>
</tr>
<tr>
<td></td>
<td>CHE 102</td>
<td>Chemistry for Engineers</td>
<td>I</td>
</tr>
<tr>
<td></td>
<td>CIVE 104</td>
<td>Mechanics 1</td>
<td>I</td>
</tr>
<tr>
<td></td>
<td>CSE 1</td>
<td>Complementry studies elective</td>
<td></td>
</tr>
<tr>
<td></td>
<td>COOP 1</td>
<td></td>
<td>I</td>
</tr>
<tr>
<td></td>
<td>WATPD20</td>
<td>Engineering Workplace Skills 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MATH 118</td>
<td>Calculus II</td>
<td>D</td>
</tr>
<tr>
<td></td>
<td>CIVE 121</td>
<td>Computational Methods</td>
<td>D</td>
</tr>
<tr>
<td></td>
<td>GEOE 153</td>
<td>Earth Engineering</td>
<td>I</td>
</tr>
<tr>
<td></td>
<td>CIVE 105</td>
<td>Mechanics 2</td>
<td>I</td>
</tr>
<tr>
<td></td>
<td>GENE 123</td>
<td>Electrical Circuits and Instrumentation</td>
<td>I</td>
</tr>
<tr>
<td></td>
<td>COOP 2</td>
<td></td>
<td>I</td>
</tr>
<tr>
<td></td>
<td>WkRprt100</td>
<td></td>
<td>I</td>
</tr>
<tr>
<td></td>
<td>WATPD21</td>
<td>Engineering Workplace Skills 2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ENVE 223</td>
<td>Differential Equations</td>
<td>D</td>
</tr>
<tr>
<td></td>
<td>EARTH 238</td>
<td>Introductory Structural Geology</td>
<td>I</td>
</tr>
<tr>
<td></td>
<td>ENVE 280</td>
<td>Fluid Mechanics</td>
<td>D</td>
</tr>
<tr>
<td></td>
<td>CSE 2</td>
<td>Complementry studies elective</td>
<td>I</td>
</tr>
<tr>
<td></td>
<td>GEOE 298</td>
<td>Seminar</td>
<td>I</td>
</tr>
</tbody>
</table>

**Course Descriptions**

1. **Knowledge Base**
   - 1.1. Demonstrate understanding of concepts in mathematics
   - 1.2. Demonstrate understanding of engineering fundamentals
   - 1.3. Demonstrate understanding of specialized engineering knowledge
   - 1.4. Demonstrate understanding of concepts in natural science

2. **Problem Analysis**
   - 2.1. Formulate a problem statement
   - 2.2. Develop models to solve engineering problems
   - 2.3. Gather information from relevant sources to address complex problems
   - 2.4. Critically evaluate and compare design choices
   - 2.5. Generate and refine potential solutions to complex, open-ended problems

3. **Investigation**
   - 3.1. Design experiments to investigate complex engineering problems
   - 3.2. Gather information from relevant sources to address complex problems
   - 3.3. Synthesize information to reach valid conclusions

4. **Design**
   - 4.1. Define design requirements and specifications for complex, open-ended problems
   - 4.2. Critically evaluate and compare design choices
   - 4.3. Generate and refine potential solutions to complex, open-ended problems
   - 4.4. Design and create engineering tools, identifying
   - 4.5. Design and create engineering tools, identifying

5. **Use of Engineering Tools**
   - 5.1. Select appropriate engineering tools, considering their limitations
   - 5.2. Modify and/or create appropriate engineering tools, identifying
   - 5.3. Use engineering tools appropriately

6. **Individual and Team Work**
   - 6.1. Contribute as an active team member or leader to complete tasks effectively as a team
   - 6.2. Collaborate with others to complete tasks effectively as a team

7. **Communication Skills**
   - 7.1. Orally present information within the profession and to society
   - 7.2. Communicate in a written format within the profession and to society
   - 7.3. Interpret information, including instructions

8. **Professionalism**
   - 8.1. Articulate the roles and responsibilities of the professional engineer in society with reference to the protection of the public and its interest
   - 8.2. Identify ethical and unethical behavior in professional situations
   - 8.3. Identify equitable and inequitable situations or behaviors

9. **Impact of Engineering**
   - 9.1. Identify the relevance of and uncertainty associated with the impact of engineering
   - 9.2. Analyze the social, health, safety and environmental aspects of an engineering problem

10. **Ethics & Equity**
    - 10.1. Identify ethical and unethical behavior in professional situations
    - 10.2. Describe the importance of codes, standards, best practices, laws, and regulations within engineering practice
    - 10.3. Reflect on the use of information received

11. **Economics & Project Management**
    - 11.1. Apply project management techniques in engineering projects, with attention to risk and change
    - 11.2. Perform economic analyses of engineering projects with attention to uncertainty and limitations

12. **Life-long Learning**
    - 12.1. Obtain and evaluate information or training from appropriate sources
    - 12.2. Reflect on the use of information received
<table>
<thead>
<tr>
<th>Terms</th>
<th>Course Number</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Introductory</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>Developing</td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>Advanced</td>
<td></td>
</tr>
</tbody>
</table>

**1. Knowledge Base**
- 1a. Demonstrate understanding of concepts in mathematics
- 1b. Demonstrate understanding of engineering fundamentals
- 1c. Demonstrate understanding of specialized engineering knowledge
- 1d. Demonstrate understanding of concepts in natural science

**2. Problem Analysis**
- 2a. Formulate a problem statement
- 2b. Develop models to solve engineering problems
- 2c. Critically evaluate solutions of engineering problems

**3. Investigation**
- 3a. Design experiments to investigate complex engineering problems
- 3b. Gather information from relevant sources to address complex problems
- 3c. Use of Engineering Tools: considering their limitations

**4. Design**
- 4a. Defining design requirements and specifications for complex, open-ended problems
- 4b. Evaluating and comparing 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
- 5c. Use engineering tools appropriately

**6. Individual and Team Work**
- 6a. Contribute as an active team member or leader to complete team
- 6b. Collaborate with others to complete tasks effectively as a team

**7. Communication Skills**
- 7a. Oral 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 problems

**9. Impact of Engineering**
- 9a. Identify the relevance of and uncertainty associated with the social, health, safety and environmental aspects of an engineering problem

**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 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 and evaluate information or training from appropriate sources
- 12b. Reflect on the use of information received
<table>
<thead>
<tr>
<th>Terms</th>
<th>Course Number</th>
<th>Course Name</th>
<th>Introductory</th>
<th>Developing</th>
<th>Advanced</th>
</tr>
</thead>
<tbody>
<tr>
<td>3B</td>
<td>WATPDE3</td>
<td>Engineering Workplace Skills Elective 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CIVE 382</td>
<td>Hydrology and Open Channel Flow</td>
<td>A</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td></td>
<td>EARTH 333</td>
<td>Introductory Sedimentology</td>
<td>D</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>EARTH 390</td>
<td>Methods in Geological Mapping</td>
<td>D</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>EARTH 437</td>
<td>Rock Mechanics</td>
<td>A</td>
<td>D</td>
<td>A</td>
</tr>
<tr>
<td></td>
<td>EARTH 438</td>
<td>Engineering Geology</td>
<td>A</td>
<td>D</td>
<td>A</td>
</tr>
<tr>
<td></td>
<td>CSE 4</td>
<td>Complementary studies elective</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>GEOE 399</td>
<td>Seminar</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>COOP 6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4A</td>
<td>GEGE 400</td>
<td>Geological Engineering Design Project 1</td>
<td>A</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td></td>
<td>CIVE 354</td>
<td>Geotechnical Engineering 2</td>
<td>I</td>
<td>D</td>
<td>I</td>
</tr>
<tr>
<td></td>
<td>GEGE 498</td>
<td>Seminar</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>TE 1</td>
<td>Technical Elective 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>TE 2</td>
<td>Technical Elective 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>TE 3</td>
<td>Technical Elective 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>WrRpt400</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>GEGE 401</td>
<td>Design Project 2</td>
<td>A</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td></td>
<td>CIVE 554</td>
<td>Geotechnical 3</td>
<td>A</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td></td>
<td>GENE 411</td>
<td>Engineering Law and Ethics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>GEGE 499</td>
<td>Seminar</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>TE 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Terms Explanation**
- **Introductory**: Basic understanding or concepts
- **Developing**: Demonstrate understanding of concepts
- **Advanced**: Demonstrate understanding and knowledge

**Course Descriptions**

**1. Knowledge Base**
- 1a. Demonstrate understanding of concepts in mathematics
- 1b. Demonstrate understanding of engineering fundamentals
- 1c. Demonstrate understanding of specialized engineering knowledge
- 1d. Demonstrate understanding of concepts in natural science

**2. Problem Analysis**
- 2a. Formulate a problem statement
- 2b. Develop models to solve engineering problems, including identifying
- 2c. Critically evaluate solutions of engineering problems

**3. Investigation**
- 3a. Design experiments to investigate complex engineering problems
- 3b. Gather information from relevant sources to address complex
- 3c. Synthesize information to reach valid conclusions

**4. Use of Engineering Tools**
- 4a. Use engineering tools, considering their limitations
- 4b. Adapt and create appropriate engineering tools, identifying
- 4c. Use engineering tools appropriately

**5. Individual and Team Work**
- 5a. Contribute as an active team member or leader to complete
- 5b. Collaborate with others to complete tasks effectively as a team

**6. Communication Skills**
- 6a. Orally present information within the profession and to society at
- 6b. Communicate in a written format within the profession and to
- 6c. Interpret information, including instructions

**7. Professionalism**
- 7a. Identify the roles and responsibilities of the professional engineer
- 7b. Describe the importance of codes, standards, best practices laws
- 7c. Identify ethical and unethical behavior in professional situations

**8. Ethics & Equity**
- 8a. Identify ethical and unethical behavior in professional situations
- 8b. Identify how an engineer is accountable to multiple stakeholders in engineering practice
- 8c. Identify equitable and inequitable situations or behaviors

**9. Economics & Project Management**
- 9a. Apply project management techniques in engineering projects, with attention to risk and change
- 9b. Perform economic analyses of engineering projects with attention to uncertainty and limitations
<table>
<thead>
<tr>
<th>Terms</th>
<th>Course Number</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>TE S</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. **Knowledge Base**
   - 1a. Demonstrate understanding of concepts in mathematics
   - 1b. Demonstrate understanding of engineering fundamentals
   - 1c. Demonstrate understanding of specialized engineering knowledge
   - 1d. Demonstrate understanding of concepts in natural science

2. **Problem Analysis**
   - 2a. Formulate a problem statement
   - 2b. Develop models to solve engineering problems
   - 2c. Critically evaluate solutions of engineering problems

3. **Investigation**
   - 3a. Design experiments to investigate complex engineering problems
   - 3b. Gather information from relevant sources to address complex problems
   - 3c. Synthesize information to reach valid conclusions

4. **Design**
   - 4a. Define design requirements and specifications for complex, open-ended problems
   - 4b. Critically evaluate and compare potential solutions to complex, open-ended problems
   - 4c. Generate and refine potential solutions to complex, open-ended problems

5. **Use of Engineering Tools**
   - 5a. Select appropriate engineering tools, considering their limitations
   - 5b. Modify and/or create appropriate engineering tools, identifying opportunities for improvement
   - 5c. Use engineering tools appropriately

6. **Individual and Team Work**
   - 6a. Contribute as an active team member or leader to complete tasks effectively as a team
   - 6b. Collaborate with others to complete tasks effectively as a team
   - 6c. Communicate effectively within the profession and to society

7. **Communication Skills**
   - 7a. Actively present information within the profession and to society
   - 7b. Communicate in a written format within the profession and to society
   - 7c. Interpret information, including directions

8. **Professionalism**
   - 8a. Articulate the roles and responsibilities of the professional engineer, including code of ethics and professional conduct
   - 8b. Describe the importance of codes, standards, best practices, laws, and regulations in engineering problems
   - 8c. Identify ethical and unethical behavior in professional situations

9. **Impact of Engineering**
   - 9a. Identify the relevance of and uncertainty associated with engineering decisions
   - 9b. Analyze the social, health, safety, and environmental aspects of engineering projects

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 in engineering projects
    - 11b. Perform economic analyses of engineering projects, considering risk and change
    - 11c. Reflect on the use of information received

12. **Life-long Learning**
    - 12a. Continuously improve knowledge, skills, and abilities
    - 12b. Identify gaps in knowledge, skills, and abilities
    - 12c. Reflect on the use of information received