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| **Course Code – CE403** | | **Soil Mechanics** | **3L + 1T** | **4 Credits** |
| **Course Objective** | To introduce different properties of soil material as every structural member rests on soil as foundation material. Different types of tests are to be conducted on soil material to determine types of foundations. | | | |
| **Course Outcome (CO)** | 1. Classify soil as per grain size distribution curve and understand the index properties of soil. 2. Apply the concept of total stress, effective stress and pore water pressure for solving geotechnical problems. 3. Assess the permeability of different types of soil and solve flow problems. 4. Estimate the seepage loss, factor of safety against piping failure using flow net related to any hydraulic structure. 5. Determine vertical stress on a horizontal plane within a soil mass subjected to different types of loading on the ground surface and also the maximum stressed zone or isobar below a loaded area. 6. Apply the concept of shear strength to analyze different geotechnical problems and determine the shear strength parameters from lab and field tests | | | |

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| **CO Distribution** | **Assignment 1 (T1)** | **Slot Test 1 (T2)** | **Assignment 2 (T3)** | **Slot Test 2 (T4)** |
| **CO1** | Q1 | Q1,Q2 |  |  |
| **CO2** | Q3, Q4,Q5 | Q2,Q3 | Q1 |  |
| **CO3** | Q4 | Q4,Q5 | Q2,Q5 | Q1 |
| **CO4** | Q4 |  | Q6 | Q3,Q2 |
| **CO5** |  |  | Q5 | Q4 ,Q6 |
| **CO6** |  |  | Q6 | Q6 |

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| **Course outcomes** | **% of students achieved CO** | **Decision on CO result (achieved) (Y/N) with level** |
| **CO1** | 74% | Y (Level: 2) |
| **CO2** | 96% | Y(Level: 3) |
| **CO3** | 72% | Y(Level:2) |
| **CO4** | 68% | Y(Level:2) |
| **CO5** | 72% | Y(Level:2) |
| **CO6** | 80% | Y(Level:3) |
| **Average CO attainment for the course through CIE CE403** | 72.0% | Level: 2 |

**Overall CO attainment (CE403) in the scale of 3**

= (40% of target level of average CO attainment through CIE) +(60% of target level of CO attainment through SEE)

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|  | | **CO Articulation Matrix** | | | | | | | | |
| **Subject Code** | **CO1** | | **CO2** | **CO3** | **CO4** | **CO5** | **CO6** | **Average CO Score**  **(CIE)** | **CO Score**  **(SEE)** | **Overall CO Attainment Score** |
| **CE502** | 2 | | 3 | 2 | 2 | 2 | 3 | 2.33 | 0 | 0.8 |

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| **CO-PO Mapping**  **Design of RC Structure**  **(Course Code - CE502)** | | | | | | | | | | | | | |
|  | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** | **PO9** | **PO10** | **PO11** | **PO12** |
| **CO1** | 3 | 2 | 2 | 1 | 2 | 3 | 2 | 1 | 2 | 1 | 1 | 3 |
| **CO2** | 3 | 3 | 2 | 2 | 2 | 1 | 2 | 1 | 1 | 1 | 1 | 3 |
| **CO3** | 2 | 2 | 2 | 3 | 3 | 2 | 1 | 1 | 1 | 1 | 2 | 3 |
| **CO4** | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 1 | 2 | 1 | 2 | 3 |
| **CO5** | 3 | 3 | 3 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 3 |
| **CO6** | 3 | 3 | 3 | 3 | 2 | 2 | 3 | 1 | 2 | 1 | 2 | 3 |
| **Average CO** | **2.8** | **2.6** | **1.6** | **2.3** | **2.3** | **2.0** | **2.0** | **1.1** | **1.6** | **1.1** | **1.8** | **3** |

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| **CO-PSO Mapping**  **Soil Mechanics**  **(Course Code – CE403)** | | | |
|  | **PSO1** | **PSO2** | **PSO3** |
| **CO1** | 1 | 2 | 3 |
| **CO2** | 3 | 3 | 3 |
| **CO3** | 3 | 2 | 3 |
| **CO4** | 2 | 2 | 3 |
| **CO5** | 2 | 2 | 3 |
| **CO6** | 2 | 3 | 3 |
| **Average CO** | 2.1 | 2.3 | 3.0 |

Following table has been generated considering mapping of CO-PO and CO attainment.

For, PO1 mapping value is = 2.8

Target PO = 3

Overall CO1 attainment score = 0.8

**Therefore, contribution to PO3 attainment is 0.8 × (2.2/3) =0.59. Others are calculated accordingly**

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| **PO Articulation Matrix** | | | | | | | | | | | | |
|  | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** | **PO9** | **PO10** | **PO11** | **PO12** |
| **CE403** | **0.59** | **0.48** | **0.43** | **0.48** | **0.53** | **0.37** | **0.69** | **0.43** | **0.59** | **0.48** | **0.53** | **0.8** |

Following table has been generated considering mapping of CO-PSO and CO attainment.

For, PSO1 mapping value is = 2.4

Target PSO = 3

Overall CO1 attainment score = 0.8

**Therefore, contribution to PO3 attainment is 0.8 × (2.4/3) =0.64. Others are calculated accordingly**

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| **PSO Articulation Matrix** | | | |
|  | **PSO1** | **PSO2** | **PSO3** |
| **CE403** | **0.64**  (2.4/3)\*0.8 | **0.59**  (2.2/3)\*0.8 | **0.69**  (2.4/3)\*0.8 |