|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Course Code – CE592** | | **CONCRETE LABORATORY** | **3P** | **2 Credits** |
| **Course Objective** | The objective of this course is to understand the characteristics and behavior of civil engineering materials used in buildings and infrastructure. Students will learn standard principles and procedure to design prepare and/or test materials such as concrete mix design including field test methods for fresh concrete. Know how to select materials based on their properties and their proper use for a particular facility under prevailing loads and environmental conditions. | | | |
| **Course Outcome (CO)** | 1. Demonstrate the method and findings of tension and compression tests on cement & concrete ingredients. 2. Understand the concepts of different test on hardened concrete & setting time. 3. Calculate the specific gravity of cement & concrete ingredients. 4. Find out the mix proportion of high grade of concrete. 5. Measure the workability of concrete mix. | | | |

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

|  |  |  |
| --- | --- | --- |
| **Course outcomes** | **% of students achieved CO** | **Decision on CO result (achieved) (Y/N) with level** |
| **CO1** | 72% | Y(Level: 2) |
| **CO2** | 78% | Y(Level: 2) |
| **CO3** | 76% | Y(Level:2) |
| **CO4** | 72% | Y(Level:2) |
| **CO5** | 82% | Y(Level: 3) |
| **Average CO attainment for the course through CIE CE592** | 76% | Level: 2 |

**Overall CO attainment (CE592) in the scale of 3**

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

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **CO Articulation Matrix** | | | | | | | | |
| **Subject Code** | **CO1** | **CO2** | **CO3** | **CO4** | **CO5** | **Average CO Score**  **(CIE)** | **CO Score**  **(SEE)** | **Overall CO Attainment Score** |
| **CE592** | 2 | 2 | 2 | 2 | 3 | 2.2 | 3 | 2.68 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **CO-PO Mapping**  **CONCRETE LABORATORY (Course Code – CE592)** | | | | | | | | | | | | | |
|  | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** | **PO9** | **PO10** | **PO11** | **PO12** |
| **CO1** | 3 | 2 | 2 | 2 | 2 | - | - | - | 1 | - | 1 | 1 |
| **CO2** | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | - | - | 1 |
| **CO3** | 3 | 2 | 2 | 2 | 2 | 1 | - | - | 1 | - | - | 1 |
| **CO4** | 1 | 1 | 1 | 1 | 1 | - | 1 | 1 | 3 | 2 | 2 | 1 |
| **CO5** | 1 | 1 | 1 | 2 | 2 | 1 | - | 1 | - | 1 | - | 1 |
| **Average CO** | **2.2** | **1.6** | **1.6** | **1.8** | **1.8** | **1** | **1** | **1** | **1.2** | **1.5** | **1** | **1** |

|  |  |  |  |
| --- | --- | --- | --- |
| **CO-PSO Mapping**  **CONCRETE LABORATORY (Course Code – CE592)** | | | |
|  | **PSO1** | **PSO2** | **PSO3** |
| **CO1** | 2 | 2 | 3 |
| **CO2** | 2 | 1 | 3 |
| **CO3** | 2 | 2 | 3 |
| **CO4** | 3 | 1 | 2 |
| **CO5** | 3 | 2 | 2 |
| **Average CO** | 2.4 | 1.6 | 2.6 |

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

For, PO1 mapping value is = 2.2

Target PO = 3

Overall CO1 attainment score = 2.68

**Therefore, contribution to PO3 attainment is 2.68 × (2.2/3) =1.96. Others are calculated accordingly**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **PO Articulation Matrix** | | | | | | | | | | | | |
|  | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** | **PO9** | **PO10** | **PO11** | **PO12** |
| **CE592** | **1.96**  (2.2/3)\*2.68 | **1.42**  (1.6/3)\*2.68 | **1.42**  (1.6/3)\*2.68 | **1.60**  (1.8/3)\*2.68 | **1.60**  (1.8/3)\*2.68 | **0.89**  (1/3)\*2.68 | **0.89**  (1/3)\*2.68 | **0.89**  (1/3)\*2.68 | **1.07**  (1.2/3)\*2.68 | **1.34**  (1.5/3)\*2.68 | **0.89**  (1/3)\*2.68 | **0.89**  (1/3)\*2.68 |

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 = 2.68

**Therefore, contribution to PO3 attainment is 2.68 × (2.4/3) =2.14. Others are calculated accordingly**

|  |  |  |  |
| --- | --- | --- | --- |
| **PSO Articulation Matrix** | | | |
|  | **PSO1** | **PSO2** | **PSO3** |
| **CE592** | **2.14**  (2.4/3)\*2.68 | **1.42**  (1.6/3)\*2.68 | **2.32**  (2.6/3)\*2.68 |