**20CE32P1 -ENVIRONMENTAL ENGINEERING LABORATORY**

**(Civil Engineering)**

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| **Course Category**  | Professional Core | **Credits** | 1.5 |
| **Course Type** | Practical | **Lecture - Tutorial - Practical** | 0 - 0 - 3 |
| **Prerequisite** | None | **Sessional Evaluation**  | 40 |
| **Semester End Exam Evaluation** | 60 |
| **Total Marks** | 100 |

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| **Course Outcomes** | CO1 | Determine color and turbidity of water |
| CO2 | Determine total, dissolved, suspended and settleable solids in water. |
| CO3 | Determine pH, acidity and alkalinity of water. |
| CO4 | Determine hardness of water and chlorides in water |
| CO5 | Determine BOD, COD and sulphates in water. |
| CO6 | Determine Optimum Coagulant Dose. |
| **Course Content** | **LIST OF EXPERIMENTS**1. Determination of Residual chlorine2. Determination of Turbidity3. Determination of total solids, suspended solids and dissolved solids4. Determination of Settleable solids5. Determination of pH 6. Determination of Acidity7. Determination of Alkalinity8. Determination of Hardness9. Determination of Chlorides10. Determination of Sulphates using UV-Vis spectrophotometer.11. Determination of COD12. Determination of Optimum Coagulant Dose13. Demonstration of BOD, Colour |
| **Textbooks**  | **TEXTBOOKS:**1. Dr. Kotaiah and Dr. N. Kumara Swamy,*Environmental Laboratory Manual*, Charotar publishing house, 1994.
2. Indian standards for Analysis of water and Wastewater.
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**CO-PO Mapping:** 3-High Mapping, 2-Moderate Mapping, 1-Low Mapping, - -Not Mapping

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|  | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** | **PO9** | **PO10** | **PO11** | **PO12** | **PSO1** | **PSO2** | **PSO3** |
| **CO1** | 2 | 2 | - | 1 | - | - | 1 | - | - | - | 1 | 2 | - | - | 1 |
| **CO2** | 2 | 2 | - | 1 | - | - | 1 | - | - | - | 1 | 2 | - | - | 1 |
| **CO3** | 3 | 2 | - | 1 | - | - | 1 | - | - | - | 1 | 2 | - | - | 1 |
| **CO4** | 3 | 2 | - | 1 | - | - | 1 | - | - | - | 1 | 2 | - | - | 1 |
| **CO5** | 3 | 2 | - | 1 | 2 | - | 1 | - | - | - | 1 | 2 | - | - | 1 |
| **CO6** | 2 | 2 | - | 1 | - | - | 1 | - | - | - | 1 | 2 | - | - | 1 |