

## **2.6 STUDENT PERFORMANCE AND LEARNING OUTCOMES**

**2.6.1 Programme and course outcomes for all  
Programmes offered by the institution are  
stated and displayed on website and  
communicated to teachers and students.**



**PRINCIPAL**  
**JKK MUNIRAJAH COLLEGE**  
**OF TECHNOLOGY**  
**T.N. PALAYAM (Po)-638 506.**  
**GOBI (TK), ERODE (Dt).**



**J.K.K.MUNIRAJAH COLLEGE OF TECHNOLOGY**

Approved by AICTE , New Delhi And Affiliated to Anna University, Chennai.

T.N.Palayam (Po), Gobi (Tk), Erode (Dt) – 638 506



**BATCH**  
**2018-2022**

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## 1. PROGRAM OUTCOMES (PO) FOR CIVIL ENGINEERING

|     |  |
|-----|--|
| PO1 | <b>Engineering knowledge:</b> Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.  |
| PO2 | <b>Problem analysis:</b> Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.   |
| PO3 | <b>Design/development of solutions:</b> Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations. |
| PO4 | <b>Conduct investigations of complex problems:</b> Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.  |
| PO5 | <b>Modern tool usage:</b> Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.   |
| PO6 | <b>The engineer and society:</b> Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.   |
| PO7 | <b>Environment and sustainability:</b> Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.   |
| PO8 | <b>Ethics:</b> Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.  |
| PO9 | <b>Individual and team work:</b> Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.   |

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|      |   |
|------|---|
| PO10 | <b>Communication:</b> Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations and give and receive clear instructions. |
| PO11 | <b>Project management and finance:</b> Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.  |
| PO12 | <b>Life Long Learning:</b> Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.  |

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## 2. PROGRAM SPECIFIC OUTCOMES (PSO) FOR CIVIL ENGINEERING

|             |   |
|-------------|---|
| <b>PSO1</b> | Graduates will be able to apply technical skills and modern engineering tools for civil engineering day to day practice.  |
| <b>PSO2</b> | Graduates will be able to participate in critical thinking and problem solving of civil engineering field that requires analytical and design requirements to face the challenging and emerging needs of our society. |

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## LIST OF COURSES FOR THE REGULATION 2017 (2018-2022 BATCH)

| S.NO               | COURSE CODE | SUBJECT CODE | TITLE OF THE SUBJECT   |
|--------------------|-------------|--------------|--|
| <b>I SEMESTER</b>  |             |              |  |
| 1                  | C101        | HS3151       | Professional English - I   |
| 2                  | C102        | MA3151       | Matrices and Calculus  |
| 3                  | C103        | PH3151       | Engineering Physics  |
| 4                  | C104        | CY3151       | Engineering Chemistry  |
| 5                  | C105        | GE3151       | Problem Solving and Python Programming                                   |
| 6                  | C106        | GE3171       | Problem Solving and Python Programming Laboratory                        |
| 7                  | C107        | BS3171       | Physics and Chemistry Laboratory   |
| <b>II SEMESTER</b> |             |              |  |
| 8                  | C108        | HS3251       | Professional English - II  |
| 9                  | C109        | MA3251       | Statistics and Numerical Methods   |
| 10                 | C110        | PH3201       | Physics for Civil Engineering  |
| 11                 | C111        | BE3252       | Basic Electrical, Electronics and Instrumentation Engineering            |
| 12                 | C112        | GE3251       | Engineering Graphics   |
| 13                 | C113        | GE3271       | Engineering Practices Laboratory   |
| 14                 | C114        | BE3272       | Basic Electrical, Electronics and Instrumentation Engineering Laboratory |

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| III SEMESTER |      |        |   |
|--------------|------|--------|---|
| 15           | C201 | MA8353 | Transforms And Partial Differential Equations |
| 16           | C202 | CE8301 | Strength of Materials - I                     |
| 17           | C203 | CE8302 | Fluid Mechanics                               |
| 18           | C204 | CE8351 | Surveying                                     |
| 19           | C205 | CE8391 | Construction Materials                        |
| 20           | C206 | CE8392 | Engineering Geology                           |
| 21           | C207 | CE8311 | Construction Materials Laboratory             |
| 22           | C208 | CE8361 | Surveying Laboratory                          |
| 23           | C209 | HS8381 | Interpersonal Skills / Listening And Speaking |
| IV SEMESTER  |      |        |   |
| 24           | C210 | MA8491 | Numerical Methods                             |
| 25           | C211 | CE8401 | Construction Techniques And Practices         |
| 26           | C212 | CE8402 | Strength of Materials - II                    |
| 27           | C213 | CE8403 | Applied Hydraulic Engineering                 |
| 28           | C214 | CE8404 | Concrete Technology                           |
| 29           | C215 | CE8491 | Soil Mechanics                                |
| 30           | C216 | CE8481 | Strength of Materials Laboratory              |
| 31           | C217 | CE8461 | Hydraulic Engineering Laboratory              |
| 32           | C218 | HS8461 | Advanced Reading And Writing                  |
| V SEMESTER   |      |        |   |
| 33           | C301 | CE8501 | Design of Reinforced Cement Concrete Elements |

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|                     |      |        |   |
|---------------------|------|--------|---|
| 34                  | C302 | CE8502 | Structural Analysis - I                           |
| 35                  | C303 | EN8491 | Water Supply Engineering                          |
| 36                  | C304 | CE8591 | Foundation Engineering                            |
| 37                  | C305 | GI8014 | Geographic Information System                     |
| 38                  | C306 | OAI551 | Environment And Agriculture                       |
| 39                  | C307 | CE8511 | Soil Mechanics Laboratory                         |
| 40                  | C308 | CE8512 | Water And Waste Water Analysis Laboratory         |
| 41                  | C309 | CE8513 | Survey Camp                                       |
| <b>VI SEMESTER</b>  |      |        |   |
| 42                  | C310 | CE8601 | Design of Steel Structural Elements               |
| 43                  | C311 | CE8602 | Structural Analysis - II                          |
| 44                  | C312 | CE8603 | Irrigation Engineering                            |
| 45                  | C313 | CE8604 | Highway Engineering                               |
| 46                  | C314 | EN8592 | Wastewater Engineering                            |
| 47                  | C315 | CE8005 | Air Pollution And Control Engineering             |
| 48                  | C316 | CE8611 | Highway Engineering Laboratory                    |
| 49                  | C317 | CE8612 | Irrigation & Environmental Engineering Drawing    |
| 50                  | C318 | HS8581 | Professional Communication                        |
| <b>VII SEMESTER</b> |      |        |   |
| 51                  | C401 | CE8701 | Estimation, Costing and Valuation Engineering     |
| 52                  | C402 | CE8702 | Railways, Airports, Docks and Harbour Engineering |

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|                      |      |        |  |
|----------------------|------|--------|--|
| 53                   | C403 | CE8703 | Structural Design and Drawing                      |
| 54                   | C404 | CE8012 | Construction, Planning and Scheduling              |
| 55                   | C405 | OME754 | Industrial Safety                                  |
| 56                   | C406 | CE8711 | Creative and Innovative Project                    |
| 57                   | C407 | CE8712 | Industrial Training                                |
| <b>VIII SEMESTER</b> |      |        |  |
| 58                   | C408 | CE8020 | Maintenance, Repair & Rehabilitation of Structures |
| 59                   | C409 | GE8076 | Professional Ethics in Engineering                 |
| 60                   | C410 | CE8811 | Project Work                                       |

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## LIST OF COURSE OUTCOMES (REGULATION 2021) FOR CIVIL

### SEMESTER I

Course Code & Name : C101 & HS3151- Professional English - I

|                                       | CO Statements   | Knowledge level |
|---------------------------------------|---|-----------------|
| <b>The students should be able to</b> |   |                 |
| <b>C101.1</b>                         | <b>Applying</b> strategies of skimming, communication, writing, speaking, listening , read articles of different types of texts and comprehend messages.                                  | <b>K3</b>       |
| <b>C101.2</b>                         | <b>Understanding</b> and comprehend different types of conversations, talks, to learn to use basic grammatical structures in suitable contexts.   | <b>K2</b>       |
| <b>C101.3</b>                         | <b>Analyzing</b> and Speak eloquently by contextualizing newly learnt vocabulary on personal information and use them appropriately in a sentence and understand their meaning in a text. | <b>K4</b>       |
| <b>C101.4</b>                         | <b>Applying</b> one's ideas and thoughts in grammatically correct and culturally appropriate language in a variety of academic and professional writings.                                 | <b>K3</b>       |
| <b>C101.5</b>                         | <b>Communication skills</b> appropriate to the study of engineering and to use the relevant materials that focus on issues related to engineering professional practice.                  | <b>K2</b>       |

|               | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 |
|---------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|
| <b>C101.1</b> | -   | -   | -   | -   | 2   | -   | -   | 2   | 3   | 3    | 3    | 3    | 2    | -    |
| <b>C101.2</b> | -   | -   | -   | -   | 2   | -   | -   | 2   | 3   | 3    | 3    | 3    | 2    | -    |
| <b>C101.3</b> | -   | -   | -   | -   | 2   | -   | -   | 2   | 3   | 3    | 3    | 3    | -    | -    |
| <b>C101.4</b> | -   | -   | -   | -   | 2   | -   | -   | 2   | 3   | 3    | 3    | 3    | 2    | -    |
| <b>C101.5</b> | -   | -   | -   | -   | 2   | -   | -   | 2   | 3   | 3    | -    | 3    | 2    | -    |
| <b>C101</b>   | -   | -   | -   | -   | 2   | -   | -   | 2   | 3   | 3    | 3    | 3    | 2    | -    |

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| Course Code & Name : C102& MA3151- Matrices and Calculus |  |                 |
|--|--|-----------------|
|  | CO Statements  | Knowledge level |
| <b>The students should be able to</b>                    |  |                 |
| C102.1   | Apply the Mathematical Knowledge of rules of matrix algebra techniques to differentiate one variable function          | K3              |
| C102.2   | Understand the knowledge of differential calculus to solve the value of the function of several variables              | K2              |
| C102.3   | Familiarize the student with functions of several variables. This is needed in many branches of engineering            | K5              |
| C102.4   | Identify and evaluate various techniques of integration  | K5              |
| C102.5   | Identify a basic knowledge and with mathematical tools needed in evaluating multiple integrals and their applications. | K3              |

|        | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | PO 8 | PO 9 | PO1 0 | PO1 1 | PO1 2 | PSO 1 | PSO 2 |
|--------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|
| C102.1 | 3    | 3    | 1    | -    | 2    | -    | -    | 2    | 1    | -     | -     | 3     | 1     | 1     |
| C102.2 | 3    | 3    | 1    | -    | 2    | -    | -    | 2    | 1    | -     | -     | 3     | 1     | 1     |
| C102.3 | 3    | 3    | 1    | -    | 2    | -    | -    | 2    | 1    | -     | -     | 3     | 1     | 1     |
| C102.4 | 3    | 3    | 1    | -    | 2    | -    | -    | 2    | 1    | -     | -     | 3     | 1     | 1     |
| C102.5 | 3    | 3    | 1    | -    | 2    | -    | -    | 2    | 1    | -     | -     | 3     | 1     | 1     |
| C102   | 3    | 3    | 1    | -    | 2    | -    | -    | 2    | 1    | -     | -     | 3     | 1     | 1     |

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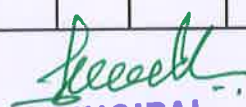
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| Course Code & Name : C103& PH3151- Engineering Physics |   |                 |
|--|---|-----------------|
|  | CO Statements   | Knowledge level |
| <b>The students should be able to</b>                  |   |                 |
| C103.1   | Develop knowledge on the basics of creativity of mechanics                            | K6              |
| C103.2   | Apply the concepts of to gain knowledge of electromagnetic waves and its applications | K3              |
| C103.3   | Acquire knowledge on the basics of oscillations, optics and lasers                    | K2              |
| C103.4   | Understand the concept of the importance of quantum physics                           | K2              |
| C103.5   | Apply the concept of quantum mechanics  | K3              |

|        | PO 1 | PO2 | PO 3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO 10 | PO 11 | PO 12 | PSO 1 | PSO 2 |
|--------|------|-----|------|-----|-----|-----|-----|-----|-----|-------|-------|-------|-------|-------|
| C103.1 | 3    | 3   | 2    | 3   | 3   | 1   | 2   | 2   | 1   | 2     | -     | 3     | -     | -     |
| C103.2 | 3    | 3   | 2    | 3   | 3   | -   | -   | 2   | 1   | 2     | -     | 3     | 1     | 1     |
| C103.3 | 3    | 3   | 2    | 3   | 3   | 2   | 2   | 2   | 1   | 3     | -     | 3     | -     | -     |
| C103.4 | 3    | 3   | 1    | 3   | 3   | 1   | -   | 2   | 1   | 2     | -     | 3     | -     | -     |
| C103.5 | 3    | 3   | 2    | 3   | 3   | 1   | -   | 2   | 1   | 3     | -     | 3     | 1     | 1     |
| C103   | 3    | 3   | 2    | 3   | 3   | 1   | 2   | 2   | 1   | 2     | -     | 3     | 1     | 1     |

  
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| Course Code & Name : C104& CY3151- Engineering Chemistry |  |                 |
|--|--|-----------------|
|  | CO Statements  | Knowledge level |
| <b>The students should be able to</b>                    |  |                 |
| C104.1   | To obtain and understanding of water quality parameters and water treatment techniques | K2              |
| C104.2   | To get the basic principles and preparatory methods of nano materials                  | K1              |
| C104.3   | To get a basic understanding of phase rules & composites                               | K2              |
| C104.4   | To Learn the concepts of fuels and combustion  | K2              |
| C104.5   | To Learn the latest trends of energy sources and storage devices                       | K3              |

|         | PO 1 | PO 2 | PO 3 | PO 4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 |
|---------|------|------|------|------|-----|-----|-----|-----|-----|------|------|------|------|------|
| C10 4.1 | 3    | 2    | 2    | 1    | 2   | 3   | 3   | 2   | -   | 1    | -    | 2    | -    | -    |
| C10 4.2 | 3    | 3    | 1    | 1    | 2   | 1   | 3   | 2   | -   | -    | -    | 2    | 1    | 1    |
| C10 4.3 | 3    | 2    | 2    | 1    | 1   | 1   | 3   | 2   | -   | 1    | -    | 2    | -    | -    |
| C10 4.4 | 3    | 2    | 1    | 1    | 1   | 1   | 3   | 2   | -   | 1    | -    | 2    | -    | -    |
| C10 4.5 | 3    | 1    | 3    | 2    | 1   | 2   | 3   | 2   | -   | -    | -    | 2    | 1    | 1    |
| C10 4   | 3    | 2    | 2    | 1    | 1   | 1   | 3   | 2   | -   | 1    | -    | 2    | 1    | 1    |

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| Course Code & Name : C105& GE3151- Problem Solving And Python Programming |  |                 |
|---|--|-----------------|
|   | CO Statements  | Knowledge level |
| <b>The students should be able to</b>                                     |  |                 |
| C105.1  | Develop algorithmic solutions to simple computational problems   | K6              |
| C105.2  | To learn to solve problems using Python conditionals and loops.  | K4              |
| C105.3  | Structure simple Python programs for solving problems.   | K2              |
| C105.4  | Represent compound data using Python lists, tuples, and dictionaries. Read and write data from/to files in Python Programs | K5              |
| C105.5  | Analyze to do input/output with files in Python  | K4              |

|        | P O1 | PO 2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 |
|--------|------|------|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|
| C105.1 | 3    | 3    | 3   | 3   | 2   | -   | -   | -   | -   | -    | 2    | 2    | 3    | 3    |
| C105.2 | 3    | 3    | 3   | 3   | 2   | -   | -   | -   | -   | -    | 2    | 2    | 3    | 3    |
| C105.3 | 3    | 3    | 3   | 3   | 2   | -   | -   | -   | -   | -    | 2    | -    | 3    | 3    |
| C105.4 | 2    | 2    | -   | 2   | 2   | -   | -   | -   | -   | -    | 1    | -    | 3    | 3    |
| C105.5 | 1    | 2    | -   | -   | 1   | -   | -   | -   | -   | -    | 1    | -    | 3    | 3    |
| C105   | 2    | 3    | 3   | 3   | 2   | -   | -   | -   | -   | -    | 2    | 2    | 3    | 3    |

  
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| Course Code & Name : C106 & GE3171- Problem Solving And Python Programming Laboratory |   |                 |
|---|---|-----------------|
|   | CO Statements   | Knowledge level |
| <b>The students should be able to</b>   |   |                 |
| C106.1  | Write, test, and debug simple Python programs.                            | K6              |
| C106.2  | Implement Python programs with conditionals and loops.                    | K4              |
| C106.3  | Develop Python programs step-wise by defining functions and calling them. | K2              |
| C106.4  | Use Python lists, tuples, dictionaries for representing compound data.    | K5              |
| C106.5  | Read and write data from/to files in Python                               | K4              |

|        | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|
| C106.1 | 3   | 3   | 3   | 3   | 3   | -   | -   | -   | -   | -    | 3    | 2    | 3    | 3    |
| C106.2 | 3   | 3   | 3   | 3   | 3   | -   | -   | -   | -   | -    | 3    | 2    | 3    | 3    |
| C106.3 | 3   | 3   | 3   | 3   | 2   | -   | -   | -   | -   | -    | 2    | -    | 3    | 3    |
| C106.4 | 3   | 2   | -   | 2   | 2   | -   | -   | -   | -   | -    | 1    | -    | 3    | 3    |
| C106.5 | 1   | 2   | -   | -   | 1   | -   | -   | -   | -   | -    | 1    | -    | 3    | 3    |
| C106   | 3   | 3   | 3   | 3   | 2   | -   | -   | -   | -   | -    | 2    | 2    | 3    | 3    |

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| Course Code & Name : C107 & BS3171- Physics And Chemistry Laboratory |   |                 |
|--|---|-----------------|
|  | CO Statements   | Knowledge level |
| <b>The students should be able to</b>                                |   |                 |
| C107.1   | <b>The hands</b> on exercises undergone by the students will help them to apply physics principles of optics and thermal physics to evaluate engineering properties of materials. | K6              |
| C107.2   | <b>The hands</b> on exercises undergone by the students will help them to apply physics principles of thermal physics to evaluate engineering properties of materials.            | K3              |
| C107.3   | <b>The hands</b> on exercises undergone by the students will help them to apply engineering properties of materials.  | K2              |
| C107.4   | <b>The students will be conversant</b> with hands-on knowledge in the quantitative chemical analysis of water quality related parameters, corrosion measurement                   | K2              |
| C107.5   | The students will be <b>outfitted</b> with hands-on knowledge in the quantitative chemical analysis of water quality related parameters.  | K3              |

|        | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|
| C107.1 | 3   | 3   | 2   | 3   | 3   | 1   | 2   | 2   | 1   | 2    | -    | 3    | -    | -    |
| C107.2 | 3   | 3   | 2   | 3   | 3   | -   | -   | 2   | 1   | 2    | -    | 3    | 1    | 1    |
| C107.3 | 3   | 3   | 2   | 3   | 3   | 2   | 2   | 2   | 1   | 3    | -    | 3    | -    | -    |
| C107.4 | 3   | 3   | 1   | 3   | 3   | 1   | -   | 2   | 1   | 2    | -    | 3    | -    | -    |
| C107.5 | 3   | 3   | 2   | 3   | 3   | 1   | -   | 2   | 1   | 3    | -    | 3    | 1    | 1    |
| C107   | 3   | 3   | 2   | 3   | 3   | 1   | 2   | 2   | 1   | 2    | -    | 3    | 1    | 1    |

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## SEMESTER II

Course Code & Name : C108 & HS3251- Professional English - II

|                                       | CO Statements  | Knowledge level |
|---------------------------------------|--|-----------------|
| <b>The students should be able to</b> |  |                 |
| C108.1                                | <b>Read</b> to engage learners in meaningful language activities to improve their reading and writing skills   | K3              |
| C108.2                                | <b>Listen</b> to learn various reading strategies and apply in comprehending documents in professional context | K2              |
| C108.3                                | <b>Speak</b> to help learners understand the purpose, audience, contexts of different types of writing         | K4              |
| C108.4                                | <b>Write</b> to develop analytical thinking skills for problem solving in communicative contexts               | K3              |
| C108.5                                | <b>Able</b> To demonstrate an understanding of job applications and interviews for internship and placements   | K2              |

|        | PO 1 | PO 2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO 1 | PSO 2 |
|--------|------|------|-----|-----|-----|-----|-----|-----|-----|------|------|------|-------|-------|
| C108.1 | -    | -    | -   | -   | 2   | -   | -   | 2   | 3   | 3    | 3    | 3    | 2     | -     |
| C108.2 | -    | -    | -   | -   | 2   | -   | -   | 2   | 3   | 3    | 3    | 3    | 2     | -     |
| C108.3 | -    | -    | -   | -   | 2   | -   | -   | 2   | 3   | 3    | 3    | 3    | -     | -     |
| C108.4 | -    | -    | -   | -   | 2   | -   | -   | 2   | 3   | 3    | 3    | 3    | 2     | -     |
| C108.5 | -    | -    | -   | -   | 2   | -   | -   | 2   | 3   | 3    | 3    | 3    | 2     | -     |
| C108   | -    | -    | -   | -   | 2   | -   | -   | 2   | 3   | 3    | 3    | 3    | 2     | -     |

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| Course Code & Name : C109 & MA3251 - Statistics and Numerical Methods |   |                 |
|---|---|-----------------|
|   | CO Statements   | Knowledge level |
| <b>The students should be able to</b>                                 |   |                 |
| C109.1  | <b>Evaluate</b> the basic concepts of a few statistical and numerical methods and give procedures for solving numerically different kinds of problems occurring in engineering and technology                         | K3              |
| C109.2  | <b>Understand</b> to acquaint the knowledge of testing of hypothesis for small and large samples which plays an important role in real life problems.   | K2              |
| C109.3  | <b>Understand</b> the basic concepts of solving algebraic and transcendental equations  | K5              |
| C109.4  | <b>Understand</b> the numerical techniques of interpolation in various intervals and numerical techniques of differentiation and integration which plays an important role in engineering and technology disciplines. | K5              |
| C109.5  | <b>Evaluate</b> To acquaint the knowledge of various techniques and methods of solving ordinary differential equations  | K3              |

|        | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|
| C109.1 | 3   | 3   | 1   | -   | 2   | -   | -   | 2   | 1   | -    | -    | 3    | 1    | 1    |
| C109.2 | 3   | 3   | 1   | -   | 2   | -   | -   | 2   | 1   | -    | -    | 3    | 1    | 1    |
| C109.3 | 3   | 3   | 1   | -   | 2   | -   | -   | 2   | 1   | -    | -    | 3    | 1    | 1    |
| C109.4 | 3   | 3   | 1   | -   | 2   | -   | -   | 2   | 1   | -    | -    | 3    | 1    | 1    |
| C109.5 | 3   | 3   | 1   | -   | 2   | -   | -   | 2   | 1   | -    | -    | 3    | 1    | 1    |
| C109   | 3   | 3   | 1   | -   | 2   | -   | -   | 2   | 1   | -    | -    | 3    | 1    | 1    |

  
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| Course Code & Name : C110 & PH3201 - Physics for Civil Engineering |  |                 |
|--|--|-----------------|
|  | CO Statements  | Knowledge level |
| <b>The students should be able to</b>                              |  |                 |
| C110.1   | <b>Gain knowledge</b> to introduce the basics of heat transfer through different materials, thermal performance of building and various thermal applications | <b>K6</b>       |
| C110.2   | <b>Gain knowledge</b> to impart knowledge on the ventilation and air conditioning of buildings   | <b>K3</b>       |
| C110.3   | <b>Gain knowledge</b> to introduce the concepts of sound insulation and lighting designs   | <b>K2</b>       |
| C110.4   | <b>Gain knowledge</b> to give an introduction to the processing and applications of new engineering materials  | <b>K2</b>       |
| C110.5   | <b>Gain knowledge</b> to create an awareness on natural disasters and safety measures  | <b>K3</b>       |

|        | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|
| C110.1 | 3   | 3   | 2   | 3   | 3   | 1   | 2   | 2   | 1   | 2    | -    | 3    | -    | -    |
| C110.2 | 3   | 3   | 2   | 3   | 3   | -   | -   | 2   | 1   | 2    | -    | 3    | 1    | 1    |
| C110.3 | 3   | 3   | 2   | 3   | 3   | 2   | 2   | 2   | 1   | 3    | -    | 3    | -    | -    |
| C110.4 | 3   | 3   | 1   | 3   | 3   | 1   | -   | 2   | 1   | 2    | -    | 3    | -    | -    |
| C110.5 | 3   | 3   | 2   | 3   | 3   | 1   | -   | 2   | 1   | 3    | -    | 3    | 1    | 1    |
| C110   | 3   | 3   | 2   | 3   | 3   | 1   | 2   | 2   | 1   | 2    | -    | 3    | 1    | 1    |

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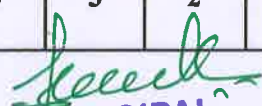
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| Course Code & Name : C111 & BE3252- Basic Electrical, Electronics and Instrumentation Engineering |  |                 |
|---|--|-----------------|
|   | CO Statements  | Knowledge level |
| <b>The students should be able to</b>   |  |                 |
| C111.1  | To learn the basics of electric circuits and analysis  | K2              |
| C111.2  | Ability to impart knowledge in the basics of working principles and application of electrical machines | K3              |
| C111.3  | Ability to introduce analog devices and their characteristics  | K4              |
| C111.4  | To learn educate on the fundamental concepts of digital electronics                                    | K2              |
| C111.5  | To learn the functional elements and working of measuring instruments                                  | K4              |

|        | PO 1 | PO 2 | PO3 | PO4 | PO5 | PO6 | PO 7 | PO8 | PO9 | PO1 0 | PO1 1 | PO1 2 | PSO 1 | PSO 2 |
|--------|------|------|-----|-----|-----|-----|------|-----|-----|-------|-------|-------|-------|-------|
| C111.1 | 3    | 3    | 3   | -   | -   | 1   | 1    | 2   | -   | 2     | 3     | 3     | 2     | 2     |
| C111.2 | 3    | 3    | 3   | -   | -   | 1   | 1    | 2   | -   | 2     | 3     | 3     | 2     | 2     |
| C111.3 | 3    | 3    | 2   | -   | -   | 1   | 1    | 2   | -   | 2     | 3     | 3     | 2     | 2     |
| C111.4 | 3    | 3    | 2   | -   | -   | 1   | 1    | 2   | -   | 2     | 3     | 3     | 2     | 2     |
| C111.5 | 3    | 3    | 2   | -   | -   | 1   | 1    | 2   | -   | 2     | 3     | 3     | 2     | 2     |
| C111   | 3    | 3    | 2   | -   | -   | 1   | 1    | 2   | -   | 2     | 3     | 3     | 2     | 2     |

  
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Course Code & Name : C112 & GE 3251 - Engineering Graphics

|                                       | CO Statements  | Knowledge level |
|---------------------------------------|--|-----------------|
| <b>The students should be able to</b> |  |                 |
| C112.1                                | Familiarize with the fundamentals and standards of Engineering graphics                      | K6              |
| C112.2                                | Perform freehand sketching of basic geometrical constructions and multiple views of objects. | K3              |
| C112.3                                | Project orthographic projections of lines and plane surfaces.                                | K4              |
| C112.4                                | Draw projections and solids and development of surfaces.                                     | K4              |
| C112.5                                | Visualize and to project isometric and perspective sections of simple solids                 | K3              |

|        | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PS O1 | PS O2 |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|-------|-------|
| C112.1 | 3   | 3   | 2   | 1   | 3   | 2   | -   | 2   | -   | 2    | -    | 3    | 2     | 2     |
| C112.2 | 3   | 3   | 2   | 1   | 3   | 2   | -   | 2   | -   | 2    | -    | 3    | 2     | 2     |
| C112.3 | 3   | 3   | 2   | 1   | 3   | 2   | -   | 2   | -   | 2    | -    | 3    | 2     | 2     |
| C112.4 | 3   | 3   | 2   | 1   | 3   | 2   | -   | 2   | -   | 2    | -    | 3    | 2     | 2     |
| C112.5 | 3   | 3   | 2   | 1   | 3   | 2   | -   | 2   | -   | 2    | -    | 3    | 2     | 2     |
| C112   | 3   | 3   | 2   | 1   | 3   | 2   | -   | 2   | -   | 2    | -    | 3    | 2     | 2     |

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| Course Code & Name : C113 & GE3271- Engineering Practices Laboratory |  |                 |
|--|--|-----------------|
|  | CO Statements  | Knowledge level |
| <b>The students should be able to</b>                                |  |                 |
| C113.1   | Fabricate carpentry components and pipe connections including plumbing works. Use welding equipments to join the structures.         | K3              |
| C113.2   | Carry out the basic machining operations   | K4              |
| C113.3   | Make the models using sheet metal works, Illustrate on centrifugal pump, Air conditioner, operations of smithy, foundry and fittings | K3              |
| C113.4   | Carry out basic home electrical works and appliances and Measure the electrical quantities   | K2              |
| C113.5   | Elaborate on the components, gates, soldering practices  | K6              |

|        | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|
| C113.1 | 3   | 3   | 3   | 1   | 3   | 3   | -   | 3   | -   | 2    | 2    | 3    | 2    | 2    |
| C113.2 | 3   | 3   | 3   | 1   | 3   | 3   | -   | 3   | -   | 2    | 2    | 3    | 2    | 2    |
| C113.3 | 3   | 3   | 3   | 1   | 3   | 3   | -   | 3   | -   | 2    | 2    | 3    | 2    | 2    |
| C113.4 | 3   | 3   | 3   | 1   | 3   | 3   | -   | 3   | -   | 2    | 2    | 3    | 2    | 2    |
| C113.5 | 3   | 3   | 3   | 1   | 3   | 3   | -   | 3   | -   | 2    | 2    | 3    | 2    | 2    |
| C113   | 3   | 3   | 3   | 1   | 3   | 3   | -   | 3   | -   | 2    | 2    | 3    | 2    | 2    |

  
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| Course Code & Name : C114& BE3272- Basic Electrical, Electronics and Instrumentation Engineering Laboratory |  |                 |
|---|--|-----------------|
|   | CO Statements  | Knowledge level |
| <b>The students should be able to</b>   |  |                 |
| C114.1  | To learn the basics of electric circuits and analysis  | K2              |
| C114.2  | Ability to impart knowledge in the basics of working principles and application of electrical machines | K3              |
| C114.3  | Ability to introduce analog devices and their characteristics  | K4              |
| C114.4  | To learn educate on the fundamental concepts of digital electronics                                    | K2              |
| C114.5  | To learn the functional elements and working of measuring instruments                                  | K4              |

|        | PO 1 | PO 2 | PO3 | PO4 | PO5 | PO6 | PO 7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 |
|--------|------|------|-----|-----|-----|-----|------|-----|-----|------|------|------|------|------|
| C114.1 | 3    | 3    | 3   | -   | -   | 1   | 1    | 2   | -   | 2    | 3    | 3    | 2    | 2    |
| C114.2 | 3    | 3    | 3   | -   | -   | 1   | 1    | 2   | -   | 2    | 3    | 3    | 2    | 2    |
| C114.3 | 3    | 3    | 2   | -   | -   | 1   | 1    | 2   | -   | 2    | 3    | 3    | 2    | 2    |
| C114.4 | 3    | 3    | 2   | -   | -   | 1   | 1    | 2   | -   | 2    | 3    | 3    | 2    | 2    |
| C114.5 | 3    | 3    | 2   | -   | -   | 1   | 1    | 2   | -   | 2    | 3    | 3    | 2    | 2    |
| C114   | 3    | 3    | 2   | -   | -   | 1   | 1    | 2   | -   | 2    | 3    | 3    | 2    | 2    |

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## LIST OF COURSE OUTCOMES (REGULATION 2017) FOR CIVIL

### SEMESTER III

Course Code & Name : C201 & MA8353- Transforms And Partial Differential Equations

|                                       | CO Statements  | Knowledge level |
|---------------------------------------|--|-----------------|
| <b>The students should be able to</b> |  |                 |
| C201.1                                | Identify the partial differential equations of both homogeneous and non-homogeneous type and understand how to solve standard partial differential equations.              | K4              |
| C201.2                                | Solve differential equations using Fourier series analysis which plays a vital role in engineering applications.   | K2              |
| C201.3                                | Solve one- and two-dimensional heat flow problems and one-dimensional wave equations using Fourier series techniques.  | K2              |
| C201.4                                | Analyze the mathematical principles on transforms and partial differential equations would provide them the ability to solve some of the physical problems of engineering. | K4              |
| C201.5                                | Apply the mathematical tools for the solutions of partial differential equations by using z-transform techniques.  | K3              |

|        | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | PO 8 | PO 9 | PO1 0 | PO1 1 | PO1 2 | PSO 1 | PSO 2 |
|--------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|
| C201.1 | 2    | 3    | -    | -    | 2    | -    | -    | -    | -    | -     | -     | -     | 2     | -     |
| C201.2 | 3    | 3    | 2    | 2    | 3    | 2    | -    | -    | -    | -     | -     | 2     | 2     | -     |
| C201.3 | 2    | 2    | -    | -    | 2    | -    | -    | -    | -    | -     | -     | -     | 2     | -     |
| C201.4 | 3    | 3    | 2    | 1    | 3    | 1    | -    | -    | -    | -     | -     | -     | 2     | 2     |
| C201.5 | 3    | 2    | 3    | 2    | 3    | 2    | -    | -    | -    | -     | -     | 2     | 2     | -     |
| C201   | 2.6  | 2.6  | 2.3  | 1.6  | 2.6  | 1.6  | -    | -    | -    | -     | -     | 2     | 2     | 2     |

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| Course Code & Name : C202 & CE8301- Strength of Materials - I |  |                 |
|---|--|-----------------|
|   | CO Statements  | Knowledge level |
| <b>The students should be able to</b>                         |  |                 |
| C202.1  | To relate the concepts of stress and strain, principal stresses and principal planes.                              | K2              |
| C202.2  | To solve the shear force and bending moment in beams and understand concept of theory of simple bending            | K2              |
| C202.3  | To solve the deflection of beams by different methods and selection of method for determining slope or deflection. | K2              |
| C202.4  | Apply basic equation of torsion in design of circular shafts and helical springs,                                  | K3              |
| C202.5  | Analyze the pin jointed plane and space trusses.   | K4              |

|        | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | PO 8 | PO 9 | PO1 0 | PO1 1 | PO1 2 | PSO 1 | PSO 2 |
|--------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|
| C202.1 | 3    | 3    | 2    | 2    | 2    | -    | -    | -    | -    | -     | -     | 2     | 2     | 2     |
| C202.2 | 3    | 3    | 2    | 2    | 2    | -    | -    | -    | -    | -     | -     | 2     | 2     | 2     |
| C202.3 | 3    | 3    | 2    | 2    | 2    | -    | -    | -    | -    | -     | -     | 2     | 2     | 2     |
| C202.4 | 3    | 3    | 2    | 2    | 2    | -    | -    | -    | -    | -     | -     | 2     | 2     | 2     |
| C202.5 | 3    | 3    | 2    | 2    | 2    | -    | -    | -    | -    | -     | -     | 2     | 2     | 2     |
| C202   | 3    | 3    | 2    | 2    | 2    | -    | -    | -    | -    | -     | -     | 2     | 2     | 2     |

  
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| Course Code & Name : C203 & CE8302- Fluid Mechanics |   |                 |
|---|---|-----------------|
|   | CO Statements   | Knowledge level |
| <b>The students should be able to</b>               |   |                 |
| C203.1  | Get a basic knowledge of fluids in static, kinematic and dynamic equilibrium. | K5              |
| C203.2  | Understand and solve the problems related to equation of motion.              | K2              |
| C203.3  | Gain knowledge about dimensional and model analysis.                          | K5              |
| C203.4  | Learn types of flow and losses of flow in pipes.                              | K3              |
| C203.5  | Understand and solve the boundary layer problems                              | K2              |

|        | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | PO 8 | PO 9 | PO1 0 | PO1 1 | PO1 2 | PSO 1 | PSO 2 |
|--------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|
| C203.1 | 3    | 2    | 1    | 2    | -    | -    | -    | -    | -    | -     | -     | -     | 3     | 3     |
| C203.2 | 3    | 3    | 2    | 1    | -    | -    | -    | -    | -    | -     | -     | -     | 3     | -     |
| C203.3 | 3    | 3    | 3    | 2    | 1    | 2    | -    | -    | -    | -     | 2     | -     | 2     | 2     |
| C203.4 | 3    | 3    | 2    | 3    | -    | -    | 2    | 2    | -    | -     | -     | -     | 3     | 3     |
| C203.5 | 3    | 2    | 3    | 2    | -    | -    | -    | -    | -    | -     | -     | -     | 3     | -     |
| C203   | 3    | 2.6  | 2.2  | 2    | 1    | 2    | 2    | 2    | -    | -     | 2     | -     | 2.8   | 2.66  |

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| Course Code & Name : C204 & CE8351- Surveying |   |                 |
|---|---|-----------------|
|   | CO Statements   | Knowledge level |
| <b>The students should be able to</b>         |   |                 |
| C204.1  | <b>The summarize</b> uses of various surveying instruments and mapping  | K5              |
| C204.2  | <b>To survey</b> the Horizontal angle and vertical angle using different instruments                                  | K3              |
| C204.3  | <b>Make</b> use of methods of Leveling and setting Levels with different instruments                                  | K6              |
| C204.4  | <b>To summarize</b> Concepts of astronomical surveying and methods to determine time, longitude, latitude and azimuth | K4              |
| C204.5  | <b>To relate</b> the concepts and principle of modern surveying.  | K5              |

|        | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | PO 8 | PO 9 | PO1 0 | PO1 1 | PO1 2 | PSO 1 | PSO 2 |
|--------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|
| C204.1 | -    | 2    | -    | -    | -    | 2    | -    | 2    | -    | -     | -     | 2     | 3     | 2     |
| C204.2 | 2    | 2    | -    | -    | -    | -    | -    | 2    | -    | -     | -     | 2     | 3     | 2     |
| C204.3 | 3    | 2    | -    | -    | -    | -    | -    | 2    | -    | -     | -     | 2     | 3     | 2     |
| C204.4 | -    | 2    | -    | -    | 3    | -    | -    | -    | -    | -     | -     | 2     | 3     | 2     |
| C204.5 | -    | 2    | -    | -    | 3    | 2    | -    | 2    | -    | -     | -     | 2     | 3     | 2     |
| C204.1 | 2.5  | 2    | -    | -    | 3    | 2    | -    | 2    | -    | -     | -     | 2     | 3     | 2     |

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| Course Code & Name : C205 & CE8391- Construction Materials |   |                 |
|--|---|-----------------|
|  | CO Statements   | Knowledge level |
| <b>The students should be able to</b>                      |   |                 |
| C205.1   | Compare the properties of most common and advanced building materials.                          | K5              |
| C205.2   | Classify the typical and potential applications of lime, cement and aggregates                  | K4              |
| C205.3   | Know the production of concrete and also the method of placing and making of concrete elements. | K6              |
| C205.4   | To summarize the applications of timbers and other materials                                    | K5              |
| C205.5   | To outline the importance of modern material for construction.                                  | K5              |

|        | P<br>O<br>1 | P<br>O<br>2 | PO<br>3 | PO<br>4 | PO<br>5 | PO<br>6 | PO<br>7 | PO<br>8 | PO<br>9 | PO1<br>0 | PO1<br>1 | PO1<br>2 | PSO<br>1 | PSO<br>2 |
|--------|-------------|-------------|---------|---------|---------|---------|---------|---------|---------|----------|----------|----------|----------|----------|
| C205.1 | -           | 3           | 3       | 2       | 3       | -       | -       | 2       | -       | -        | -        | 3        | 3        | 2        |
| C205.2 | -           | 3           | 3       | 2       | 3       | -       | -       | 2       | -       | -        | -        | 3        | 3        | 2        |
| C205.3 | -           | 3           | 3       | 2       | 3       | -       | -       | 2       | -       | -        | -        | 3        | 3        | 2        |
| C205.4 | -           | 3           | 3       | 2       | 3       | -       | -       | 2       | -       | -        | -        | 3        | 3        | 2        |
| C205.5 | -           | 3           | 3       | 2       | 3       | -       | -       | 2       | -       | -        | -        | 3        | 3        | 2        |
| C205   | -           | 3           | 3       | 2       | 3       | -       | -       | 2       | -       | -        | -        | 3        | 3        | 2        |

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| Course Code & Name : C206 & CE8392 - Engineering Geology |  |                 |
|--|--|-----------------|
|  | CO Statements  | Knowledge level |
| <b>The students should be able to</b>                    |  |                 |
| C206.1   | To summarize the importance of geological knowledge such as earth, earthquake, volcanism and the action of various geological agencies | K5              |
| C206.2   | To get basics knowledge on properties of minerals.   | K4              |
| C206.3   | To Gain relates the types of rocks, their distribution and uses.   | K5              |
| C206.4   | To interpret the study on geological structure.  | K6              |
| C206.5   | To make use of geological investigation in projects such as dams, tunnels, bridges, roads, airport and harbor.                         | K6              |

|        | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | PO 8 | PO 9 | PO1 0 | PO1 1 | PO1 2 | PSO 1 | PSO 2 |
|--------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|
| C206.1 | -    | 2    | 2    | -    | 2    | -    | -    | 2    | -    | -     | -     | 2     | -     | -     |
| C206.2 | -    | 2    | 2    | -    | 2    | -    | -    | 2    | -    | -     | -     | 2     | -     | -     |
| C206.3 | -    | 2    | 2    | -    | 2    | -    | -    | 2    | -    | -     | -     | 2     | -     | -     |
| C206.4 | -    | 2    | 2    | -    | 2    | -    | -    | 2    | -    | -     | -     | 2     | -     | -     |
| C206.5 | -    | 2    | 2    | -    | 2    | -    | -    | 2    | -    | -     | -     | 2     | 2     | -     |
| C206   | -    | 2    | 2    | -    | 2    | -    | -    | 2    | -    | -     | -     | 2     | 2     | -     |

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| Course Code & Name : C207 & CE8311- Construction Materials Laboratory |   |                 |
|---|---|-----------------|
|   | CO Statements   | Knowledge level |
| <b>The students should be able to</b>                                 |   |                 |
| C207.1  | To experiment with fine aggregates to analyse its properties.                     | K6              |
| C207.2  | To analyse the physical properties of the coarse aggregates.                      | K4              |
| C207.3  | To analyse the different properties of concrete.                                  | K4              |
| C207.4  | To examine the different physical properties of bricks and blocks                 | K4              |
| C207.5  | To summarize the properties of different materials used in the construction field | K4              |

|        | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | PO 8 | PO 9 | PO1 0 | PO1 1 | PO1 2 | PSO 1 | PSO 2 |
|--------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|
| C207.1 | 2    | -    | -    | -    | 2    | -    | -    | -    | -    | -     | -     | -     | -     | -     |
| C207.2 | 2    | -    | -    | -    | 2    | -    | -    | 2    | -    | -     | -     | -     | -     | -     |
| C207.3 | 2    | -    | -    | -    | 2    | -    | 2    | 2    | -    | -     | -     | 2     | 2     | -     |
| C207.4 | 2    | -    | 2    | 2    | 2    | -    | 2    | 2    | -    | -     | -     | 2     | 2     | -     |
| C207.5 | 2    | -    | 2    | -    | -    | 2    | -    | -    | -    | -     | -     | 2     | -     | -     |
| C207   | 2    | -    | 2    | 2    | 2    | 2    | 2    | 2    | -    | -     | -     | 2     | 2     | -     |

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| Course Code & Name : C208 & CE8361 - Surveying Laboratory |  |                 |
|---|--|-----------------|
|   | CO Statements  | Knowledge level |
| <b>The students should be able to</b>                     |  |                 |
| C208.1  | To classify the different chaining accessories for chaining and using them to erect the perpendicular offset and foundation marking. | K5              |
| C208.2  | Make use of compass to measure bearing and find out included angle.  | K6              |
| C208.3  | Make use of levelling instruments to carry out different types of levelling.   | K6              |
| C208.4  | Make use of theodolite to measure angles and determine the heights and elevation using the tacheometry.                              | K6              |
| C208.5  | To identify difference in elevation of the land using modern equipment   | K4              |

|        | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | PO 8 | PO 9 | PO1 0 | PO1 1 | PO1 2 | PSO 1 | PSO 2 |
|--------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|
| C208.1 | 2    | 2    | 2    | 2    | 3    | 2    | -    | -    | 2    | 1     | -     | 2     | -     | -     |
| C208.2 | 2    | 2    | 2    | 2    | 3    | 2    | -    | -    | 2    | 1     | -     | 2     | -     | -     |
| C208.3 | 2    | 2    | 2    | 2    | 3    | 2    | -    | -    | 2    | 1     | -     | 2     | -     | -     |
| C208.4 | 2    | 2    | 2    | 2    | 3    | 2    | -    | -    | 2    | 1     | -     | 2     | -     | -     |
| C208.5 | 2    | 2    | 2    | 2    | 3    | 2    | -    | -    | 2    | 1     | -     | 3     | 2     | 2     |
| C208   | 2    | 2    | 2    | 2    | 3    | 2    | -    | -    | 2    | 1     | -     | 2.2   | 2     | 2     |

  
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| Course Code & Name : C209 & HS8381- Interpersonal Skills / Listening And Speaking |  |                 |
|---|--|-----------------|
|   | CO Statements  | Knowledge level |
| <b>The students should be able to</b>   |  |                 |
| C209.1  | <b>Apply the</b> Listen and Respond to everyday topics with reasonable accuracy  | K3              |
| C209.2  | <b>Outline to</b> Introduce themselves and their friends and Take part effectively in informal conversations in English. | K4              |
| C209.3  | <b>Develop</b> conversations and short talks in English.   | K6              |
| C209.4  | <b>Make use of</b> effective presentations and Participate in GD.  | K6              |
| C209.5  | <b>Develop</b> confidently and appropriately in conversations both formal and informal.                                  | K5              |

|        | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | PO 8 | PO 9 | PO1 0 | PO1 1 | PO1 2 | PSO 1 | PSO 2 |
|--------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|
| C209.1 | -    | -    | -    | -    | -    | -    | -    | -    | 2    | 3     | -     | 2     | 3     | 3     |
| C209.2 | -    | -    | -    | -    | -    | -    | -    | -    | 2    | 3     | -     | 2     | 2     | 3     |
| C209.3 | -    | -    | -    | -    | -    | -    | -    | -    | 2    | 3     | -     | 2     | 3     | 3     |
| C209.4 | -    | -    | -    | -    | -    | -    | -    | -    | 2    | 3     | -     | 2     | 3     | 3     |
| C209.5 | -    | -    | -    | -    | -    | -    | -    | -    | 2    | 3     | -     | 2     | 3     | 3     |
| C209   | -    | -    | -    | -    | -    | -    | -    | -    | 2    | 3     | -     | 2     | 3     | 3     |

  
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## SEMESTER IV

### Course Code & Name : C210 & MA8491- Numerical Methods

|                                       | CO Statements   | Knowledge level |
|---------------------------------------|---|-----------------|
| <b>The students should be able to</b> |   |                 |
| C210.1                                | To solve a set of algebraic representing steady state models formed in engineering problems.  | K2              |
| C210.2                                | To deal with interpolation and approximation for the applications of finite elements analysis.  | K2              |
| C210.3                                | To find the trend information from discrete data set through numerical differentiation and summary information through numerical integration. | K6              |
| C210.4                                | To predict the system dynamic behavior through solution of ODEs modeling the system.  | K2              |
| C210.5                                | To solve PDE representing spatial and temporal variations in physical systems through numerical methods.                                      | K2              |

|        | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | PO 8 | PO 9 | PO1 0 | PO1 1 | PO1 2 | PSO 1 | PSO 2 |
|--------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|
| C210.1 | 3    | 2    | -    | 2    | 2    | 3    | -    | -    | -    | 2     | -     | 1     | 2     | -     |
| C210.2 | 3    | 2    | -    | 2    | 2    | 3    | -    | -    | -    | 2     | -     | 1     | 2     | -     |
| C210.3 | 3    | 2    | -    | 2    | 2    | 3    | -    | -    | -    | 2     | -     | 1     | 2     | 2     |
| C210.4 | 3    | 2    | -    | 2    | 2    | 3    | -    | -    | -    | 2     | -     | 1     | 2     | 2     |
| C210.5 | 3    | 2    | -    | 2    | 2    | 3    | -    | -    | -    | 2     | -     | 1     | 2     | 2     |
| C210.1 | 3    | 2    | -    | 2    | 2    | 3    | -    | -    | -    | 2     | -     | 1     | 2     | 2     |

  
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| Course Code & Name : C211 & CE8401 - Construction Techniques And Practices |   |                 |
|--|---|-----------------|
|  | CO Statements   | Knowledge level |
| <b>The students should be able to</b>                                      |   |                 |
| C211.1   | To summarize the different construction techniques and structural systems.                                  | K2              |
| C211.2   | To compare various techniques and practices on masonry construction, flooring, and roofing.                 | K4              |
| C211.3   | To Plan the requirements for substructure construction.   | K6              |
| C211.4   | To summarize the methods and techniques involved in the construction of various types of super structures.  | K2              |
| C211.5   | To Select, maintain and operate hand and power tools and equipment used in the building construction sites. | K5              |

|        | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | PO 8 | PO 9 | PO1 0 | PO1 1 | PO1 2 | PSO 1 | PSO 2 |
|--------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|
| C211.1 | -    | 2    | -    | -    | 2    | 2    | -    | 2    | -    | -     | -     | 2     | 2     | 2     |
| C211.2 | -    | 2    | -    | -    | 2    | 2    | -    | 2    | -    | -     | -     | 2     | 2     | 2     |
| C211.3 | -    | 2    | -    | -    | 2    | 2    | -    | 2    | -    | -     | -     | 2     | 2     | 2     |
| C211.4 | -    | 2    | -    | -    | 2    | 2    | -    | 2    | -    | -     | -     | 2     | 2     | 2     |
| C211.5 | -    | 2    | -    | -    | 2    | 2    | -    | 2    | -    | -     | 2     | 2     | 2     | 2     |
| C211   | -    | 2    | -    | -    | 2    | 2    | -    | 2    | -    | -     | 2     | 2     | 2     | 2     |

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| Course Code & Name : C212 & CE8402 - Strength of Materials - II |  |                 |
|---|--|-----------------|
|   | CO Statements  | Knowledge level |
| <b>The students should be able to</b>                           |  |                 |
| C212.1  | To calculate the strain energy and compute the deflection of determinate beams, frames and trusses using energy principles                         | K5              |
| C212.2  | Analyze propped cantilever, fixed beams and continuous beams using theorem of three moment equation for external loadings and support settlements. | K4              |
| C212.3  | To find the load carrying capacity of columns and stresses induced in columns and cylinders  | K6              |
| C212.4  | To Solve the principal stresses and planes for an element in three-dimensional state of stress and study various theories of failure               | K4              |
| C212.5  | Determine the stresses due to Unsymmetrical bending of beams, locate the shear center, and find the stresses in curved beams.                      | K5              |

|        | P<br>O<br>1 | PO<br>2 | PO<br>3 | PO<br>4 | PO<br>5 | PO<br>6 | PO<br>7 | PO<br>8 | PO<br>9 | PO1<br>0 | PO1<br>1 | PO1<br>2 | PSO<br>1 | PSO<br>2 |
|--------|-------------|---------|---------|---------|---------|---------|---------|---------|---------|----------|----------|----------|----------|----------|
| C212.1 | 3           | 3       | 2       | 2       | 2       | -       | -       | -       | -       | -        | -        | 2        | 2        | 2        |
| C212.2 | 3           | 3       | 2       | 2       | 2       | -       | -       | -       | -       | -        | -        | 2        | 2        | 2        |
| C212.3 | 3           | 3       | 2       | 2       | 2       | -       | -       | -       | -       | -        | -        | 2        | 2        | 2        |
| C212.4 | 3           | 3       | 2       | 2       | 2       | -       | -       | -       | -       | -        | -        | 2        | 2        | 2        |
| C212.5 | 3           | 3       | 2       | 2       | 2       | -       | -       | -       | -       | -        | -        | 2        | 2        | 2        |
| C212.1 | 3           | 3       | 2       | 2       | 2       | -       | -       | -       | -       | -        | -        | 2        | 2        | 2        |

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| Course Code & Name : C213 & CE8403- Applied Hydraulic Engineering |  |                 |
|---|--|-----------------|
|   | CO Statements  | Knowledge level |
| <b>The students should be able to</b>                             |  |                 |
| C213.1  | To recall the knowledge of fluid mechanics in addressing problems in open channels.          | K1              |
| C213.2  | To identify a effective section for flow in different cross sections.                        | K5              |
| C213.3  | To solve problems in uniform, gradually and rapidly varied flows in steady state conditions. | K2              |
| C213.4  | To summarize the principles, working and application of turbines.                            | K5              |
| C213.5  | To summarize the principles, working and application of pumps.                               | K5              |

|        | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | PO 8 | PO 9 | PO1 0 | PO1 1 | PO1 2 | PSO 1 | PSO 2 |
|--------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|
| C213.1 | 3    | 2    | -    | 2    | -    | -    | -    | 2    | -    | -     | -     | 2     | -     | -     |
| C213.2 | 3    | 2    | -    | 2    | -    | -    | -    | 2    | -    | -     | -     | 2     | -     | -     |
| C213.3 | 3    | 2    | -    | 2    | -    | -    | -    | 2    | -    | -     | -     | 2     | 2     | -     |
| C213.4 | 2    | 3    | -    | 2    | -    | -    | -    | 2    | -    | -     | -     | 2     | 2     | -     |
| C213.5 | 2    | 3    | -    | 2    | -    | -    | -    | 2    | -    | -     | -     | 2     | 2     | -     |
| C213   | 2.6  | 2.4  | -    | 2    | -    | -    | -    | 2    | -    | -     | -     | 2     | -     | -     |

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| Course Code & Name : C214 & CE8404 - Concrete Technology |   |                 |
|--|---|-----------------|
|  | CO Statements   | Knowledge level |
| <b>The students should be able to</b>                    |   |                 |
| C214.1   | To illustrate the requirements of cement, aggregates and water for making concrete. | K1              |
| C214.2   | To summarize the effects of admixtures on properties of concrete.                   | K2              |
| C214.3   | To summarize the concepts and procedure of mix design as per IS method.             | K2              |
| C214.4   | To summarize the properties of concrete at fresh and hardened state.                | K2              |
| C214.5   | To identify the importance and application of special concretes.                    | K5              |

|        | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | PO 8 | PO 9 | PO1 0 | PO1 1 | PO1 2 | PSO 1 | PSO 2 |
|--------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|
| C214.1 | 3    | 2    | -    | 2    | -    | -    | 2    | 2    | -    | -     | -     | 3     | 3     | 2     |
| C214.2 | 3    | 2    | -    | 2    | -    | -    | 2    | 2    | -    | -     | -     | 3     | 3     | 2     |
| C214.3 | 3    | 2    | -    | 2    | -    | -    | 2    | 2    | -    | -     | -     | 3     | 3     | 2     |
| C214.4 | 3    | 2    | -    | 2    | -    | -    | 2    | 2    | -    | -     | -     | 3     | 3     | 2     |
| C214.5 | 3    | 2    | -    | 2    | -    | -    | 2    | 2    | -    | -     | -     | 3     | 3     | 2     |
| C214   | 3    | 2    | -    | 2    | -    | -    | 2    | 2    | -    | -     | -     | 3     | 3     | 2     |

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| Course Code & Name : C215 & CE8491- Soil Mechanics |   |                 |
|--|---|-----------------|
|  | CO Statements   | Knowledge level |
| <b>The students should be able to</b>              |   |                 |
| C215.1   | Analyze the classification of soils and assess the engineering properties | K4              |
| C215.2   | Understand the stress concepts in soils                                   | K2              |
| C215.3   | Understand and identify the settlement's in soil                          | K2              |
| C215.4   | Determine the shear strength of soil                                      | K5              |
| C215.5   | Analyze the both finite and infinite slopes                               | K4              |

|        | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | PO 8 | PO 9 | PO1 0 | PO1 1 | PO1 2 | PSO 1 | PSO 2 |
|--------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|
| C215.1 | 3    | 3    | 3    | 1    | 2    | 2    | -    | 2    | 2    | 3     | -     | 3     | 3     | 3     |
| C215.2 | 3    | 3    | 3    | 2    | 2    | 2    | -    | 3    | 2    | 3     | -     | 3     | 3     | 3     |
| C215.3 | 3    | 3    | 3    | 2    | 2    | 2    | -    | 2    | 2    | 2     | -     | 3     | 3     | 3     |
| C215.4 | 3    | 3    | 3    | 2    | 2    | 2    | -    | 2    | 2    | 2     | -     | 3     | 3     | 3     |
| C215.5 | 3    | 3    | 3    | 2    | 2    | 2    | -    | 3    | 2    | 2     | -     | 3     | 3     | 3     |
| C215   | 3    | 3    | 3    | 2    | 2    | 2    | -    | 2    | 2    | 2     | -     | 3     | 3     | 3     |

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| Course Code & Name : C216 & CE8481- Strength of Materials Laboratory |  |                 |
|--|--|-----------------|
|  | CO Statements  | Knowledge level |
| <b>The students should be able to</b>                                |  |                 |
| C216.1   | Test for stress values under tension and double shear tests.                             | K5              |
| C216.2   | Examine the modulus of rigidity and angle of twist under torsional loading               | K4              |
| C216.3   | Examine the hardness using Rockwell and Brinell hardness machines and its microstructure | K4              |
| C216.4   | Inspect the stiffness of helical springs under compression loading                       | K5              |
| C216.5   | Test for impact and Deflection properties  | K5              |

|        | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | PO 8 | PO 9 | PO1 0 | PO1 1 | PO1 2 | PSO 1 | PSO 2 |
|--------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|
| C216.1 | 3    | 3    | 3    | 3    | -    | -    | -    | 3    | 3    | 3     | -     | 2     | 3     | 3     |
| C216.2 | 3    | 3    | 3    | 3    | -    | -    | -    | 3    | 3    | 3     | -     | 2     | 3     | 3     |
| C216.3 | 3    | 3    | 3    | 3    | -    | -    | -    | 3    | 3    | 3     | -     | 2     | 3     | 3     |
| C216.4 | 3    | 3    | 3    | -    | -    | -    | -    | 3    | 3    | 3     | -     | -     | 3     | 3     |
| C216.5 | 3    | 3    | 3    | 3    | -    | -    | -    | 3    | 3    | 3     | -     | 2     | 3     | 3     |
| C216   | 3    | 3    | 3    | 3    | -    | -    | -    | 3    | 3    | 3     | -     | 2     | 3     | 3     |

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| Course Code & Name : C217 & CE8461- Hydraulic Engineering Laboratory |  |                 |
|--|--|-----------------|
|  | CO Statements  | Knowledge level |
| <b>The students should be able to</b>                                |  |                 |
| <b>C217.1</b>  | <b>Identify the coefficient of discharge using Orifice meter and Venturimeter.</b> | <b>K5</b>       |
| <b>C217.2</b>  | <b>To inspect the flow in pipes due to frictional losses.</b>                      | <b>K5</b>       |
| <b>C217.3</b>  | <b>Examine the performance characteristics of various pumps.</b>                   | <b>K4</b>       |
| <b>C217.4</b>  | <b>Experiment with turbines to find the performance characteristics..</b>          | <b>K4</b>       |
| <b>C217.5</b>  | <b>Analyze the metacentric height of floating bodies.</b>                          | <b>K4</b>       |

|               | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | PO 8 | PO 9 | PO1 0 | PO1 1 | PO1 2 | PSO 1 | PSO 2 |
|---------------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|
| <b>C217.1</b> | 3    | -    | -    | -    | -    | -    | -    | 3    | 3    | -     | -     | 2     | 3     | 3     |
| <b>C217.2</b> | 3    | 3    | -    | -    | -    | -    | -    | 3    | 3    | 3     | -     | -     | 3     | 3     |
| <b>C217.3</b> | 3    | 3    | -    | -    | -    | -    | -    | 3    | 3    | 3     | -     | -     | 3     | 3     |
| <b>C217.4</b> | 3    | 3    | -    | -    | -    | 2    | -    | 3    | 3    | 3     | -     | 2     | 3     | 3     |
| <b>C217.5</b> | 3    | 3    | -    | -    | -    | 2    | -    | 3    | 3    | 3     | -     | 2     | 3     | 3     |
| <b>C217</b>   | 3    | 3    |      | 3    |      | 2    |      | 3    | 3    | 3     |       | 2     | 3     | 3     |

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| Course Code & Name : C218 & HS8461- Advanced Reading And Writing |  |                 |
|--|--|-----------------|
|  | CO Statements  | Knowledge level |
| <b>The students should be able to</b>                            |  |                 |
| C218.1   | Read and evaluate the text intelligently.  | K5              |
| C218.2   | Understand parts of speech and use appropriate connectives in writing a paragraph. | K2              |
| C218.3   | To write effective job application letter.   | K3              |
| C218.4   | Implement speed reading techniques.  | K3              |
| C218.5   | Perform critical thinking in various professional contexts.                        | K2              |
| C218.6   | To prepare descriptive and narrative writing.                                      | K6              |
| C218.7   | Exhibit ethical principles in engineering practices                                | K1              |
| C218.8   | Perform task as an individual and / or team member to manage the task in time      | K2              |
| C218.9   | Express the Engineering activities with effective presentation and report.         | K1              |
| C218.10  | Interpret the findings with appropriate technological / research citation.         | K4              |

|         | P<br>O<br>1 | P<br>O<br>2 | P<br>O<br>3 | P<br>O<br>4 | P<br>O<br>5 | P<br>O<br>6 | P<br>O<br>7 | P<br>O<br>8 | P<br>O<br>9 | PO10 | PO11 | PO12 | PSO1 | PSO2 |
|---------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------|------|------|------|------|
| C218.1  | -           | -           | -           | -           | -           | -           | -           | -           | 2           | 3    | -    | 3    | -    | -    |
| C218.2  | -           | -           | -           | -           | -           | -           | -           | -           | 2           | 2    | -    | 2    | -    | -    |
| C218.3  | -           | -           | -           | -           | -           | -           | -           | -           | 2           | 3    | -    | 3    | -    | -    |
| C218.4  | -           | -           | -           | -           | -           | -           | -           | -           | 2           | 2    | -    | 3    | -    | -    |
| C218.5  | -           | -           | -           | -           | -           | -           | -           | -           | 3           | 2    | -    | 3    | -    | -    |
| C218.6  | -           | -           | -           | -           | -           | -           | -           | -           | 2           | 2    | -    | 2    | -    | -    |
| C218.7  | -           | -           | -           | -           | -           | -           | -           | 3           | -           | -    | -    | -    | -    | -    |
| C218.8  | -           | -           | -           | -           | -           | -           | -           | -           | 3           | -    | 3    | -    | -    | -    |
| C218.9  | -           | -           | -           | -           | -           | -           | -           | -           | -           | 3    | -    | -    | -    | -    |
| C218.10 | -           | -           | -           | -           | -           | -           | -           | -           | -           | -    | -    | 3    | -    | -    |
| C218    | -           | -           | -           | -           | -           | -           | -           | 3           | 2           | 2    | 3    | 3    | -    | -    |

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## SEMESTER V

Course Code & Name : C301 & CE8501 - Design of Reinforced Cement Concrete Elements

|                                       | CO Statements   | Knowledge level |
|---------------------------------------|---|-----------------|
| <b>The students should be able to</b> |   |                 |
| <b>C301.1</b>                         | <b>To summarize</b> the various design methodologies for the design of RC elements.                           | <b>K5</b>       |
| <b>C301.2</b>                         | <b>Make use</b> of limit state method to design t flanged beams and sign of beams for shear, bond and torsion | <b>K6</b>       |
| <b>C301.3</b>                         | <b>To plan</b> the various types of slabs and staircase by limit state method.                                | <b>K6</b>       |
| <b>C301.4</b>                         | <b>To Design</b> columns for axial, uniaxial and biaxial eccentric loadings                                   | <b>K6</b>       |
| <b>C301.5</b>                         | <b>To design</b> the footing of building by considering factor of safety.                                     | <b>K6</b>       |

|               | P<br>O<br>1 | PO<br>2  | PO<br>3  | PO<br>4  | PO<br>5  | PO<br>6  | PO<br>7  | PO<br>8  | PO<br>9  | PO1<br>0 | PO1<br>1 | PO1<br>2 | PSO<br>1 | PSO<br>2 |
|---------------|-------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| <b>C301.1</b> | 3           | 3        | 3        | 2        | 2        | -        | -        | 2        | -        | -        | -        | 3        | 3        | 3        |
| <b>C301.2</b> | 3           | 3        | 3        | 2        | 2        | -        | -        | 2        | -        | -        | -        | 3        | 3        | 3        |
| <b>C301.3</b> | 3           | 3        | 3        | 2        | 2        | -        | -        | 2        | -        | -        | -        | 3        | 3        | 3        |
| <b>C301.4</b> | 3           | 3        | 3        | 2        | 2        | -        | -        | 2        | -        | -        | -        | 3        | 3        | 3        |
| <b>C301.5</b> | 3           | 3        | 3        | 2        | 2        | -        | -        | 2        | -        | -        | -        | 3        | 3        | 3        |
| <b>C301</b>   | <b>3</b>    | <b>3</b> | <b>3</b> | <b>2</b> | <b>2</b> | <b>-</b> | <b>-</b> | <b>2</b> | <b>-</b> | <b>-</b> | <b>-</b> | <b>3</b> | <b>3</b> | <b>3</b> |

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| Course Code & Name : C302 & CE8502 - Structural Analysis - I |  |                 |
|--|--|-----------------|
|  | CO Statements  | Knowledge level |
| <b>The students should be able to</b>                        |  |                 |
| C302.1   | To Analyze continuous beams, pin-jointed indeterminate plane frames and rigid plane frames by strain energy method.            | K4              |
| C302.2   | To Analyse the continuous beams and rigid frames by slope deflection method.   | K4              |
| C302.3   | Summarize the concept of moment distribution and analysis of continuous beams and rigid frames with and without sway.          | K5              |
| C302.4   | To Analyse the indeterminate pin jointed plane frames continuous beams and rigid frames using matrix flexibility method.       | K4              |
| C302.5   | Summarize the concept of matrix stiffness method and analysis of continuous beams, pin jointed trusses and rigid plane frames. | K5              |

|        | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | PO 8 | PO 9 | PO1 0 | PO1 1 | PO1 2 | PSO 1 | PSO 2 |
|--------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|
| C302.1 | 3    | 3    | 2    | 2    | 2    | 2    | -    | -    | -    | -     | -     | 3     | 3     | 3     |
| C302.2 | 3    | 3    | 2    | 2    | 2    | 2    | -    | -    | -    | -     | -     | 3     | 3     | 3     |
| C302.3 | 3    | 3    | 2    | 2    | 2    | 2    | -    | -    | -    | -     | -     | 3     | 3     | 3     |
| C302.4 | 3    | 3    | 2    | 2    | 2    | 2    | -    | -    | -    | -     | -     | 3     | 3     | 3     |
| C302.5 | 3    | 3    | 2    | 2    | 2    | 2    | -    | -    | -    | -     | -     | 3     | 3     | 3     |
| C302   | 3    | 3    | 2    | 2    | 2    | 2    | -    | -    | -    | -     | -     | 3     | 3     | 3     |

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| Course Code & Name : C303 & EN8491- Water Supply Engineering |  |                 |
|--|--|-----------------|
|  | CO Statements  | Knowledge level |
| <b>The students should be able to</b>                        |  |                 |
| C303.1   | To <b>outline</b> the structure of drinking water supply systems, including water transport, treatment and distribution. | <b>K1</b>       |
| C303.2   | To <b>summarize</b> the various unit operations and processes in water treatment   | <b>K5</b>       |
| C303.3   | To <b>summarize</b> the design for various functional units in water treatment   | <b>K5</b>       |
| C303.4   | To <b>classify</b> the water quality criteria and standards, and their relation to public health                         | <b>K5</b>       |
| C303.5   | To <b>develop</b> design and evaluate water supply project alternatives on basis of chosen criteria.                     | <b>K6</b>       |

|        | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | PO 8 | PO 9 | PO1 0 | PO1 1 | PO1 2 | PSO 1 | PSO 2 |
|--------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|
| C303.1 | 2    | -    | 2    | 2    | 2    | 2    | -    | 2    | -    | -     | -     | 2     | 3     | 2     |
| C303.2 | 2    | -    | 2    | 2    | 2    | -    | -    | 2    | -    | -     | -     | 2     | 3     | 2     |
| C303.3 | 2    | -    | 2    | 2    | 2    | -    | -    | 2    | -    | -     | -     | 2     | 3     | 2     |
| C303.4 | 2    | -    | 2    | 2    | 2    | -    | -    | 2    | -    | -     | -     | 2     | 3     | 2     |
| C303.5 | 2    | 2    | 2    | 2    | 2    | -    | 2    | 2    | -    | -     | -     | 2     | 3     | 2     |
| C303   | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | -    | -     | -     | 2     | 3     | 2     |

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| Course Code & Name : C304 & CE8591- Foundation Engineering |   |                 |
|--|---|-----------------|
|  | CO Statements   | Knowledge level |
| <b>The students should be able to</b>                      |   |                 |
| <b>C304.1</b>  | <b>To summarize the site investigation methods and sampling.</b>                        | <b>K5</b>       |
| <b>C304.2</b>  | <b>To develop knowledge on bearing capacity and testing methods on soil</b>             | <b>K6</b>       |
| <b>C304.3</b>  | <b>By analyzing the loads bearing capacity of the soil design the shallow footings.</b> | <b>K4</b>       |
| <b>C304.4</b>  | <b>To analyse the load carrying capacity and settlement of pile foundation.</b>         | <b>K4</b>       |
| <b>C304.5</b>  | <b>To examine the earth pressure on retaining walls to analyse soil stability.</b>      | <b>K5</b>       |

|               | PO1      | PO2      | PO3      | PO4      | PO5      | PO6      | PO7      | PO8      | PO9      | PO10     | PO11     | PO12     | PSO1     | PSO2     |
|---------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| <b>C304.1</b> | 2        | 3        | -        | 2        | -        | 2        | -        | -        | -        | -        | -        | 3        | 3        | 2        |
| <b>C304.2</b> | 2        | 3        | -        | 2        | -        | 2        | -        | -        | -        | -        | -        | 3        | 3        | 2        |
| <b>C304.3</b> | 2        | 3        | -        | 2        | -        | 2        | -        | -        | -        | -        | -        | 3        | 3        | 2        |
| <b>C304.4</b> | 2        | 3        | -        | 2        | -        | 2        | -        | -        | -        | -        | -        | 3        | 3        | 2        |
| <b>C304.5</b> | 2        | 3        | -        | 2        | -        | 2        | -        | -        | -        | -        | -        | 3        | 3        | 2        |
| <b>C304</b>   | <b>2</b> | <b>3</b> | <b>-</b> | <b>2</b> | <b>-</b> | <b>2</b> | <b>-</b> | <b>-</b> | <b>-</b> | <b>-</b> | <b>-</b> | <b>3</b> | <b>3</b> | <b>2</b> |

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| Course Code & Name : C305 & GI8014- Geographic Information System |  |                 |
|---|--|-----------------|
|   | CO Statements  | Knowledge level |
| <b>The students should be able to</b>                             |  |                 |
| <b>C305.1</b>   | <b>Understand the fundamentals and components of Geographic Information.</b> | <b>K5</b>       |
| <b>C305.2</b>   | <b>Construct spatial data models.</b>  | <b>K4</b>       |
| <b>C305.3</b>   | <b>Apply and learn Data Input And Topology.</b>                              | <b>K4</b>       |
| <b>C305.4</b>   | <b>Understand the data quality and standards.</b>                            | <b>K3</b>       |
| <b>C305.5</b>   | <b>Derive and understand Data Management And Output.</b>                     | <b>K5</b>       |

|               | PO1      | PO2      | PO3        | PO4      | PO5        | PO6      | PO7      | PO8        | PO9      | PO10       | PO11     | PO12     | PSO1        | PSO2       |
|---------------|----------|----------|------------|----------|------------|----------|----------|------------|----------|------------|----------|----------|-------------|------------|
| <b>C305.1</b> | 3        | -        | -          | -        | 1          | 3        | -        | -          | -        | -          | 3        | 3        | 3           | -          |
| <b>C305.2</b> | 3        | -        | 2          | 2        | 3          | -        | -        | -          | 2        | -          | -        | 2        | 1           | -          |
| <b>C305.3</b> | 3        | 3        | -          | -        | 3          | -        | 2        | 3          | -        | 3          | -        | -        | -           | 2          |
| <b>C305.4</b> | 3        | -        | 3          | -        | -          | -        | -        | 2          | -        | -          | -        | 1        | 2           | 1          |
| <b>C305.5</b> | 3        | -        | 3          | -        | 3          | -        | -        | -          | -        | 2          | 1        | 2        | 3           | 2          |
| <b>C305</b>   | <b>3</b> | <b>3</b> | <b>2.7</b> | <b>-</b> | <b>2.5</b> | <b>3</b> | <b>2</b> | <b>2.5</b> | <b>2</b> | <b>2.5</b> | <b>2</b> | <b>2</b> | <b>2.25</b> | <b>1.7</b> |

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| Course Code & Name : C306 & OAI551- Environment And Agriculture |  |                 |
|---|--|-----------------|
|   | CO Statements  | Knowledge level |
| <b>The students should be able to</b>                           |  |                 |
| C306.1  | Get a basic knowledge Globalization and its impacts  | K5              |
| C306.2  | Understand and solve the problems Erosion and problems of deposition in irrigation systems | K2              |
| C306.3  | Gain knowledge about Water scarcity and water shortages.                                   | K6              |
| C306.4  | Learn types of Ecological diversity, wild life and agriculture.                            | K2              |
| C306.5  | Understand and solve Agricultural environment policies and its impacts                     | K2              |

|        | PO 1 | PO 2 | PO 3 | PO4 | PO 5 | PO 6 | PO 7 | PO 8 | PO 9 | PO1 0 | PO1 1 | PO1 2 | PSO 1 | PSO 2 |
|--------|------|------|------|-----|------|------|------|------|------|-------|-------|-------|-------|-------|
| C306.1 | 2    | -    | -    | -   | -    | -    | 2    | -    | -    | -     | -     | 3     | -     | 2     |
| C306.2 | 2    | 2    | -    | 3   | -    | -    | 3    | -    | -    | -     | -     | -     | -     | 2     |
| C306.3 | 2    | -    | -    | 2   | -    | -    |      | -    | -    | -     | -     | 3     | -     | 1     |
| C306.4 | 2    | 2    | -    | -   | -    | -    | 3    | -    | -    | -     | -     | -     | -     | -     |
| C306.5 | 3    | 2    | -    | -   | -    | -    |      | -    | -    | -     | -     | 3     | -     | -     |
| C306   | 2.2  | 2    | -    | 2.5 | -    | -    | 2.6  | -    | -    | -     | -     | 3     | -     | 1.7   |

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| Course Code & Name : C307 & CE8511- Soil Mechanics Laboratory |   |                 |
|---|---|-----------------|
|   | CO Statements   | Knowledge level |
| <b>The students should be able to</b>                         |   |                 |
| C307.1  | To <b>analyse</b> the index properties of soil.   | K4              |
| C307.2  | To <b>examine</b> the density of soil in the field using sand replacement and core cutter method. | K4              |
| C307.3  | To <b>inspect</b> the moisture content in the soil using the proctor compaction test.             | K2              |
| C307.4  | To <b>examine</b> the permeability of soil using different methods                                | K4              |
| C307.5  | To <b>test</b> the soil to know its various engineering properties.                               | K4              |

|        | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | PO 8 | PO 9 | PO1 0 | PO1 1 | PO1 2 | PSO 1 | PSO 2 |
|--------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|
| C307.1 | 3    | 2    | -    | 2    | -    | 2    | 2    | -    | -    | -     | -     | 2     | 3     | 3     |
| C307.2 | 3    | 2    | -    | 2    | -    | 2    | 2    | -    | -    | -     | -     | 2     | 3     | 3     |
| C307.3 | 3    | 2    | -    | 2    | -    | 2    | 2    | -    | -    | -     | -     | 2     | 3     | 3     |
| C307.4 | 3    | 2    | -    | 2    | -    | 2    | 2    | -    | -    | -     | -     | 2     | 3     | 3     |
| C307.5 | 3    | 2    | -    | 2    | -    | 2    | 2    | -    | -    | -     | -     | 2     | 3     | 3     |
| C307.1 | 3    | 2    | -    | 2    | -    | 2    | 2    | -    | -    | -     | -     | 2     | 3     | 3     |

  
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| Course Code & Name : C308 & CE8512 - Water And Waste Water Analysis Laboratory |  |                 |
|--|--|-----------------|
|  | CO Statements  | Knowledge level |
| <b>The students should be able to</b>  |  |                 |
| C308.1   | To outline the influence lines for statically determinate structures and calculate critical stress resultants. | K1              |
| C308.2   | To summarize the Muller Breslau principle and draw the influence line for statically indeterminate beams.      | K5              |
| C308.3   | Analyse of three hinged, two hinged and fixed arches.  | K4              |
| C308.4   | Analyse the suspension bridges with stiffening girders   | K4              |
| C308.5   | To summarize the concept of Plastic analysis and the method of analyzing beams and rigid frames.               | K5              |

|        | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | PO 8 | PO 9 | PO1 0 | PO1 1 | PO1 2 | PSO 1 | PSO 2 |
|--------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|
| C308.1 | -    | -    | 2    | 2    | 2    | -    | -    | -    | -    | -     | -     | 3     | 3     | 2     |
| C308.2 | -    | -    | 2    | 2    | 2    | -    | -    | -    | -    | -     | -     | 3     | 3     | 2     |
| C308.3 | -    | -    | 2    | 2    | 2    | -    | -    | -    | -    | -     | -     | 3     | 3     | 2     |
| C308.4 | -    | -    | 2    | 2    | 2    | -    | -    | -    | -    | -     | -     | 3     | 3     | 2     |
| C308.5 | -    | -    | 2    | 2    | 2    | -    | -    | -    | -    | -     | -     | 3     | 3     | 2     |
| C308   | -    | -    | 2    | 2    | 2    | -    | -    | -    | -    | -     | -     | 3     | 3     | 2     |

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| Course Code & Name : C309 & CE8513 - Survey Camp |   |                 |
|--|---|-----------------|
|  | CO Statements   | Knowledge level |
| <b>The students should be able to</b>            |   |                 |
| C309.1   | To <b>conduct</b> the traverse survey using modern survey equipment.            | K5              |
| C309.2   | To <b>divide</b> the land into blocks and carry out survey to plot contour map  | K5              |
| C309.3   | To <b>find</b> the sun's azimuth angle.   | K5              |
| C309.4   | <b>Make</b> use of GPS to know the latitude and longitude of the camp location. | K6              |
| C309.5   | To <b>set</b> out the curve by deflection angle.                                | K2              |

|        | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | PO 8 | PO 9 | PO1 0 | PO1 1 | PO1 2 | PSO 1 | PSO 2 |
|--------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|
| C309.1 | 3    | 2    | 3    | 2    | 3    | 2    | -    | -    | -    | -     | -     | 2     | 3     | 2     |
| C309.2 | 3    | 2    | 3    | 2    | 3    | 2    | -    | -    | -    | -     | -     | 2     | 3     | 2     |
| C309.3 | 3    | 2    | 3    | 2    | 3    | 2    | -    | -    | -    | -     | -     | 2     | 3     | 2     |
| C309.4 | 3    | 2    | 3    | 2    | 3    | 2    | -    | -    | -    | -     | -     | 2     | 3     | 2     |
| C309.5 | 3    | 2    | 3    | 2    | 3    | 2    | -    | -    | -    | -     | -     | 2     | 3     | 2     |
| C309   | 3    | 2    | 3    | 2    | 3    | 2    | -    | -    | -    | -     | -     | 2     | 3     | 2     |

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## SEMESTER VI

Course Code & Name : C310 & CE8601- Design of Steel Structural Elements

|                                       | CO Statements  | Knowledge level |
|---------------------------------------|--|-----------------|
| <b>The students should be able to</b> |  |                 |
| <b>C310.1</b>                         | <b>To Summarize</b> the concepts of various design philosophies  | <b>K5</b>       |
| <b>C310.2</b>                         | <b>To develop</b> the common bolted and welded connections for steel structures.                                 | <b>K6</b>       |
| <b>C310.3</b>                         | <b>Analyse</b> the tension members and understand the effect of shear lag.                                       | <b>K4</b>       |
| <b>C310.4</b>                         | <b>To Summarize</b> the design concept of axially loaded columns and column base connections.                    | <b>K5</b>       |
| <b>C310.5</b>                         | <b>Analyse</b> the specific problems related to the design of laterally restrained and unrestrained steel beams. | <b>K2</b>       |

|               | PO 1     | PO 2     | PO 3     | PO 4     | PO 5     | PO 6     | PO 7     | PO 8     | PO 9     | PO1 0    | PO1 1    | PO1 2    | PSO 1    | PSO 2    |
|---------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| <b>C310.1</b> | 3        | 3        | 3        | 3        | 2        | 2        | -        | 2        | -        | -        | -        | 3        | 3        | 2        |
| <b>C310.2</b> | 3        | 3        | 3        | 3        | 2        | 2        | -        | 2        | -        | -        | -        | 3        | 3        | 2        |
| <b>C310.3</b> | 3        | 3        | 3        | 3        | 2        | 2        | -        | 2        | -        | -        | -        | 3        | 3        | 2        |
| <b>C310.4</b> | 3        | 3        | 3        | 3        | 2        | 2        | -        | 2        | -        | -        | -        | 3        | 3        | 2        |
| <b>C310.5</b> | 3        | 3        | 3        | 3        | 2        | 2        | -        | 2        | -        | -        | -        | 3        | 3        | 2        |
| <b>C310</b>   | <b>3</b> | <b>3</b> | <b>3</b> | <b>3</b> | <b>2</b> | <b>2</b> | <b>-</b> | <b>2</b> | <b>-</b> | <b>-</b> | <b>-</b> | <b>3</b> | <b>3</b> | <b>2</b> |

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| Course Code & Name : C311 & CE8602- Structural Analysis - II |  |                 |
|--|--|-----------------|
|  | CO Statements  | Knowledge level |
| <b>The students should be able to</b>                        |  |                 |
| C311.1   | To outline the influence lines for statically determinate structures and calculate critical stress resultants. | K1              |
| C311.2   | To summarize the Muller Breslau principle and draw the influence line for statically indeterminate beams.      | K5              |
| C311.3   | Analyse of three hinged, two hinged and fixed arches.  | K4              |
| C311.4   | Analyse the suspension bridges with stiffening girders   | K4              |
| C311.5   | To summarize the concept of Plastic analysis and the method of analyzing beams and rigid frames.               | K5              |

|        | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | PO 8 | PO 9 | PO1 0 | PO1 1 | PO1 2 | PSO 1 | PSO 2 |
|--------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|
| C311.1 | 3    | 3    | 2    | 2    | 2    | 2    | -    | -    | -    | -     | -     | 3     | 3     | 3     |
| C311.2 | 3    | 3    | 2    | 2    | 2    | 2    | -    | -    | -    | -     | -     | 3     | 3     | 3     |
| C311.3 | 3    | 3    | 2    | 2    | 2    | 2    | -    | -    | -    | -     | -     | 3     | 3     | 3     |
| C311.4 | 3    | 3    | 2    | 2    | 2    | 2    | -    | -    | -    | -     | -     | 3     | 3     | 3     |
| C311.5 | 3    | 3    | 2    | 2    | 2    | 2    | -    | -    | -    | -     | -     | 3     | 3     | 3     |
| C311   | 3    | 3    | 2    | 2    | 2    | 2    | -    | -    | -    | -     | -     | 3     | 3     | 3     |

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| Course Code & Name : C312 & CE8603- Irrigation Engineering |  |                 |
|--|--|-----------------|
|  | CO Statements  | Knowledge level |
| <b>The students should be able to</b>                      |  |                 |
| C312.1   | To outline the knowledge and skills on crop water requirements.    | K1              |
| C312.2   | To classify the methods and management of irrigation.              | K5              |
| C312.3   | To summarize the types of Impounding structures                    | K5              |
| C312.4   | To summarize the methods of irrigation including canal irrigation. | K5              |
| C312.5   | How to optimize the water usage in the irrigation system.          | K2              |

|        | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | PO 8 | PO 9 | PO1 0 | PO1 1 | PO1 2 | PSO 1 | PSO 2 |
|--------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|
| C312.1 | 2    | 2    | -    | -    | -    | 2    | 2    | -    | -    | -     | -     | 3     | 3     | 2     |
| C312.2 | 2    | 2    | -    | -    | -    | 2    | 2    | -    | -    | -     | -     | 3     | 3     | 2     |
| C312.3 | 2    | 2    | -    | -    | -    | 2    | 2    | -    | -    | -     | -     | 3     | 3     | 2     |
| C312.4 | 2    | 2    | -    | -    | -    | 2    | 2    | -    | -    | -     | -     | 3     | 3     | 2     |
| C312.5 | 2    | 2    | -    | -    | -    | 2    | 2    | -    | -    | -     | -     | 3     | 3     | 2     |
| C312   | 2    | 2    | -    | -    | -    | 2    | 2    | -    | -    | -     | -     | 3     | 3     | 2     |

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| Course Code & Name : C313 & CE8604 - Highway Engineering |   |                 |
|--|---|-----------------|
|  | CO Statements   | Knowledge level |
| <b>The students should be able to</b>                    |   |                 |
| C313.1   | To summarize planning and aligning of highway.  | K5              |
| C313.2   | To Analyse the Geometric design of highways.  | K4              |
| C313.3   | Apply the acquired knowledge on the design flexible and rigid pavements.                                      | K3              |
| C313.4   | Recall the Highway construction materials, properties, testing methods.                                       | K1              |
| C313.5   | To illustrate the concept of pavement management system, evaluation of distress and maintenance of pavements. | K2              |

|        | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | PO 8 | PO 9 | PO1 0 | PO1 1 | PO1 2 | PSO 1 | PSO 2 |
|--------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|
| C313.1 | 3    | 3    | 2    | -    | 2    | 2    | -    | 2    | -    | -     | -     | 2     | 3     | 2     |
| C313.2 | 3    | 3    | 2    | -    | 2    | 2    | -    | 2    | -    | -     | -     | 2     | 3     | 2     |
| C313.3 | 3    | 3    | 2    | -    | 2    | 2    | -    | 2    | -    | -     | -     | 2     | 3     | 2     |
| C313.4 | 3    | 3    | 2    | -    | 2    | 2    | -    | 2    | -    | -     | -     | 2     | 3     | 2     |
| C313.5 | 3    | 3    | 2    | -    | 2    | 2    | -    | 2    | -    | -     | -     | 2     | 3     | 2     |
| C313   | 3    | 3    | 2    | -    | 2    | 2    | -    | 2    | -    | -     | -     | 2     | 3     | 2     |

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| Course Code & Name : C314 & EN8592- Wastewater Engineering |  |                 |
|--|--|-----------------|
|  | CO Statements  | Knowledge level |
| <b>The students should be able to</b>                      |  |                 |
| C314.1   | To Summarize the sewage characteristics and design sewer system including sewage pumping stations.                               | K5              |
| C314.2   | To summarize the onsite sanitation and design of primary treatment of sewage.  | K5              |
| C314.3   | Analyse the basic performance and design of the unit operations and processes that are used in secondary sewage treatment plant. | K4              |
| C314.4   | To summarize the standard methods for disposal of sewage.  | K5              |
| C314.5   | To develop knowledge on sludge treatment and methods of sludge disposal units.   | K5              |

|        | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | PO 8 | PO 9 | PO1 0 | PO1 1 | PO1 2 | PSO 1 | PSO 2 |
|--------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|
| C314.1 | 3    | 2    | 3    | 2    | 2    | -    | 2    | 3    | -    | -     | -     | 3     | 3     | 2     |
| C314.2 | 3    | 2    | 3    | 2    | 2    | -    | 2    | 2    | -    | -     | -     | 3     | 3     | 2     |
| C314.3 | 3    | 2    | 3    | 2    | 2    | -    | 2    | 3    | -    | -     | -     | 3     | 3     | 2     |
| C314.4 | 3    | 2    | 3    | 2    | 2    | -    | 2    | 2    | -    | -     | -     | 3     | 3     | 2     |
| C314.5 | 3    | 2    | 3    | 2    | 2    | -    | 2    | 2    | -    | -     | -     | 3     | 3     | 2     |
| C314   | 3    | 2    | 3    | 2    | 2    | -    | 2    | 2.4  | -    | -     | -     | 3     | 3     | 2     |

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| Course Code & Name : C315 & CE8005- Air Pollution And Control Engineering |  |                 |
|---|--|-----------------|
|   | CO Statements  | Knowledge level |
| <b>The students should be able to</b>                                     |  |                 |
| <b>C315.1</b>   | An <b>understanding</b> of the nature and characteristics of the air pollutants.   | <b>K2</b>       |
| <b>C315.2</b>   | Knowledge on basic concepts of air quality management and ability to <b>identify</b> the various types of plume dispersion | <b>K4</b>       |
| <b>C315.3</b>   | <b>Ability</b> to select appropriate equipments and models to control the pollutants                                       | <b>K2</b>       |
| <b>C315.4</b>   | Capability to <b>monitor</b> the air quality standards for gaseous contaminants.   | <b>K3</b>       |
| <b>C315.5</b>   | The Competence to <b>identify</b> , control and prevent noise pollution.   | <b>K4</b>       |

|               | PO 1     | PO 2     | PO 3     | PO 4     | PO 5     | PO 6     | PO 7     | PO 8     | PO 9     | PO1 0      | PO1 1    | PO1 2    | PSO 1    | PSO 2    |
|---------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|------------|----------|----------|----------|----------|
| <b>C315.1</b> | 3        | 3        | -        | 2        | -        | -        | -        | 2        | -        | 2          | 2        | 3        | 3        | 2        |
| <b>C315.2</b> | 3        | 3        | -        | 2        | -        | -        | -        | 2        | -        | 2          | 2        | 3        | 3        | 2        |
| <b>C315.3</b> | 3        | 3        | -        | 2        | -        | -        | -        | 2        | -        | 3          | 2        | 3        | 3        | 2        |
| <b>C315.4</b> | 3        | 3        | -        | 2        | -        | -        | -        | 2        | -        | 2          | 2        | 3        | 3        | 2        |
| <b>C315.5</b> | 3        | 3        | -        | 2        | -        | -        | -        | 2        | -        | 2          | 2        | 3        | 3        | 2        |
| <b>C315</b>   | <b>3</b> | <b>3</b> | <b>-</b> | <b>2</b> | <b>-</b> | <b>-</b> | <b>-</b> | <b>2</b> | <b>-</b> | <b>2.2</b> | <b>2</b> | <b>3</b> | <b>3</b> | <b>2</b> |

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| Course Code & Name : C316 & CE8611- Highway Engineering Laboratory |  |                 |
|--|--|-----------------|
|  | CO Statements  | Knowledge level |
| <b>The students should be able to</b>                              |  |                 |
| C316.1   | Select suitable aggregate material by testing the physical properties  | K4              |
| C316.2   | Determine properties of bitumen and its grade  | K5              |
| C316.3   | Determine CBR value of material for subgrade and subsequent layers of pavement                                     | K5              |
| C316.4   | Design job mix formula for bituminous surface using Marshal Stability test.  | K6              |
| C316.5   | Student should be able to test of existing highway and examine the quality of that highway by Benkelman Beam Test. | K5              |

|        | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | PO 8 | PO 9 | PO1 0 | PO1 1 | PO1 2 | PSO 1 | PSO 2 |
|--------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|
| C316.1 | 3    | 2    | 2    | -    | 2    | 2    | -    | 2    | -    | -     | -     | 2     | 3     | 2     |
| C316.2 | 3    | 2    | 2    | -    | 2    | 2    | -    | 2    | -    | -     | -     | 2     | 3     | 2     |
| C316.3 | 3    | 2    | 2    | -    | 2    | 2    | -    | 2    | -    | -     | -     | 2     | 3     | 2     |
| C316.4 | 3    | 2    | 2    | -    | 2    | 2    | -    | 2    | -    | -     | -     | 2     | 3     | 2     |
| C316.5 | 3    | 2    | 2    | -    | 2    | 2    | -    | 2    | -    | -     | -     | 2     | 3     | 2     |
| C316.1 | 3    | 2    | 2    | -    | 2    | 2    | -    | 2    | -    | -     | -     | 2     | 3     | 2     |

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| Course Code & Name : C317 & CE8612- Irrigation & Environmental Engineering Drawing |   |                 |
|--|---|-----------------|
|  | CO Statements   | Knowledge level |
| <b>The students should be able to</b>  |   |                 |
| <b>C317.1</b>  | <b>To develop the fundamental design on the tank structure.</b>   | <b>K5</b>       |
| <b>C317.2</b>  | <b>To Analyse and design the different types of dam.</b>  | <b>K4</b>       |
| <b>C317.3</b>  | <b>To plan and construct the structure of cross drainage system considering all the elements in it.</b>                   | <b>K6</b>       |
| <b>C317.4</b>  | <b>To plan and design the elements of water treatment plant along with pumping stations and house service connection.</b> | <b>K6</b>       |
| <b>C317.5</b>  | <b>To plan and design the primary, secondary treating elements of sewage water treatment plant.</b>                       | <b>K6</b>       |

|               | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | PO 8 | PO 9 | PO1 0 | PO1 1 | PO1 2 | PSO 1 | PSO 2 |
|---------------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|
| <b>C317.1</b> | 3    | 2    | 3    | 2    | -    | -    | -    | -    | 2    | 2     | 2     | 2     | 3     | 2     |
| <b>C317.2</b> | 3    | 2    | 3    | 2    | -    | -    | -    | -    | 2    | 2     | 2     | 2     | 3     | 2     |
| <b>C317.3</b> | 3    | 2    | 3    | 2    | -    | -    | -    | -    | 2    | 2     | 2     | 2     | 3     | 2     |
| <b>C317.4</b> | 3    | 2    | 3    | 2    | -    | -    | -    | -    | 2    | 2     | 2     | 2     | 3     | 2     |
| <b>C317.5</b> | 3    | 2    | 3    | 2    | -    | -    | -    | -    | 2    | 2     | 2     | 2     | 3     | 2     |
| <b>C317</b>   | 3    | 2    | 3    | 2    | -    | -    | -    | -    | 2    | 2     | 2     | 2     | 3     | 2     |

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| Course Code & Name : C318 & HS8581- Professional Communication |   |                 |
|--|---|-----------------|
|  | CO Statements   | Knowledge level |
| <b>The students should be able to</b>                          |   |                 |
| <b>C318.1</b>  | <b>Take international examination such as IELTS and TOFEL</b> | <b>K2</b>       |
| <b>C318.2</b>  | <b>Participate in presentation</b>                            | <b>K2</b>       |
| <b>C318.3</b>  | <b>Play a part in group discussions</b>                       | <b>K4</b>       |

|               | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | PO 8 | PO 9 | PO1 0 | PO1 1 | PO1 2 | PSO 1 | PSO 2 |
|---------------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|
| <b>C318.1</b> | -    | -    | -    | -    | -    | -    | -    | -    | 3    | 3     | 3     | 3     | -     | -     |
| <b>C318.2</b> | -    | -    | -    | -    | -    | -    | -    | -    | 3    | 3     | 3     | 3     | -     | -     |
| <b>C318.3</b> | -    | -    | -    | -    | -    | 2    | -    | -    | 3    | 3     | 3     | 3     | -     | -     |
| <b>C318</b>   | -    | -    | -    | -    | -    | 2    | -    | -    | 3    | 3     | 3     | 3     | -     | -     |

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## SEMESTER VII

Course Code & Name : C401 & CE8701 - Estimation, Costing and Valuation Engineering

|                                       | CO Statements   | Knowledge level |
|---------------------------------------|---|-----------------|
| <b>The students should be able to</b> |   |                 |
| <b>C401.1</b>                         | <b>Explain</b> the basic concept of quantity estimation for building, roads, canals and hydraulic structures by manual and software packages.                         | <b>K5</b>       |
| <b>C401.2</b>                         | <b>Acquire</b> the knowledge to calculate rate analysis and man-hours required for the common civil works by manual and software packages.                            | <b>K2</b>       |
| <b>C401.3</b>                         | <b>Develop</b> the specification for the materials used in construction, online and offline tender procedures and tender document preparation and report preparation. | <b>K5</b>       |
| <b>C401.4</b>                         | <b>Acquire</b> the knowledge of construction contracts and contract document preparation.   | <b>K2</b>       |
| <b>C401.5</b>                         | <b>Identify</b> the valuation for building, land and plant and machineries, calculation of rent, mortgage and lease.  | <b>K4</b>       |

|               | PO 1     | PO 2     | PO 3     | PO 4     | PO 5     | PO 6     | PO 7     | PO 8     | PO 9     | PO1 0    | PO1 1    | PO1 2    | PSO 1    | PSO 2    |
|---------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| <b>C401.1</b> | 3        | 1        | 2        | 1        | -        | -        | -        | 1        | -        | -        | -        | -        | 3        | 1        |
| <b>C401.2</b> | 3        | 2        | 3        | 2        | -        | -        | 1        | 1        | -        | -        | -        | -        | 3        | 1        |
| <b>C401.3</b> | 3        | 2        | 3        | 3        | -        | -        | 1        | 1        | -        | -        | -        | -        | 3        | 1        |
| <b>C401.4</b> | 3        | 2        | 3        | 2        | -        | -        | 1        | 1        | -        | -        | -        | -        | 1        | 1        |
| <b>C401.5</b> | 2        | 1        | 1        | 1        | -        | -        | 1        | 1        | -        | -        | -        | -        | 3        | 1        |
| <b>C401</b>   | <b>3</b> | <b>2</b> | <b>3</b> | <b>3</b> | <b>-</b> | <b>-</b> | <b>1</b> | <b>1</b> | <b>-</b> | <b>-</b> | <b>-</b> | <b>-</b> | <b>3</b> | <b>1</b> |

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| Course Code & Name : C402 & CE8702- Railways, Airports, Docks and Harbour Engineering |  |                 |
|---|--|-----------------|
|   | CO Statements  | Knowledge level |
| <b>The students should be able to</b>   |  |                 |
| <b>C402.1</b>   | <b>Understand</b> the methods of route alignment and design elements in Railway Planning and Constructions.                                      | <b>K2</b>       |
| <b>C402.2</b>   | <b>Understand</b> the Construction techniques and Maintenance of Track laying and Railway stations.  | <b>K2</b>       |
| <b>C402.3</b>   | <b>Gain</b> an insight on the planning and site selection of Airport Planning and design.  | <b>K6</b>       |
| <b>C402.4</b>   | <b>Analyze</b> and design the elements for orientation of runways and passenger facility systems.  | <b>K4</b>       |
| <b>C402.5</b>   | <b>Understand</b> the various feature in Harbours and Ports, their construction, coastal protection works and coastal Regulations to be adopted. | <b>K2</b>       |

|               | PO 1     | PO 2     | PO 3     | PO 4     | PO 5     | PO 6     | PO 7     | PO 8     | PO 9     | PO1 0    | PO1 1    | PO1 2    | PSO 1    | PSO 2    |
|---------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| <b>C402.1</b> | 3        | 2        | 2        | -        | 2        | 2        | -        | 2        | -        | -        | -        | 2        | 3        | 2        |
| <b>C402.2</b> | 3        | 2        | 2        | -        | 2        | 2        | -        | 2        | -        | -        | -        | 2        | 3        | 2        |
| <b>C402.3</b> | 3        | 2        | 2        | -        | 2        | 2        | -        | 2        | -        | -        | -        | 2        | 3        | 2        |
| <b>C402.4</b> | 3        | 2        | 2        | -        | 2        | 2        | -        | 2        | -        | -        | -        | 2        | 3        | 2        |
| <b>C402.5</b> | 3        | 2        | 2        | -        | 2        | 2        | -        | 2        | -        | -        | -        | 2        | 3        | 2        |
| <b>C402</b>   | <b>3</b> | <b>2</b> | <b>2</b> | <b>-</b> | <b>2</b> | <b>2</b> | <b>-</b> | <b>2</b> | <b>-</b> | <b>-</b> | <b>-</b> | <b>2</b> | <b>3</b> | <b>2</b> |

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Thookanaickenpalayam - 638 506. GOBI TK, ERODE DT, Tamil Nadu.



| Course Code & Name : C403 & CE68703 - Structural Design and Drawing |  |                 |
|---|--|-----------------|
|   | CO Statements  | Knowledge level |
| <b>The students should be able to</b>                               |  |                 |
| <b>C403.1</b>   | <b>Design and draw reinforced concrete Cantilever and Counter fort Retaining Walls</b> | <b>K6</b>       |
| <b>C403.2</b>   | <b>Design and draw flat slab as per code provisions</b>                                | <b>K6</b>       |
| <b>C403.3</b>   | <b>Design and draw reinforced concrete and steel bridges</b>                           | <b>K6</b>       |
| <b>C403.4</b>   | <b>Design and draw reinforced concrete and steel water tanks</b>                       | <b>K6</b>       |
| <b>C403.5</b>   | <b>Design and detail the various steel trusses and gantry girders</b>                  | <b>K6</b>       |

|               | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | PO 8 | PO 9 | PO 0 | PO 1 | PO 2 | PSO 1 | PSO 2 |
|---------------|------|------|------|------|------|------|------|------|------|------|------|------|-------|-------|
| <b>C403.1</b> | 3    | 3    | 3    | 3    | 2    | 2    | -    | -    | -    | -    | 2    | 3    | 3     | 3     |
| <b>C403.2</b> | 3    | 3    | 3    | 3    | 2    | 2    | -    | -    | -    | -    | 2    | 3    | 3     | 3     |
| <b>C403.3</b> | 3    | 3    | 3    | 3    | 2    | 2    | -    | -    | -    | -    | 2    | 3    | 3     | 3     |
| <b>C403.4</b> | 3    | 3    | 3    | 3    | 2    | 2    | -    | -    | -    | -    | 2    | 3    | 3     | 3     |
| <b>C403.5</b> | 3    | 3    | 3    | 3    | 2    | 2    | -    | -    | -    | -    | 2    | 3    | 3     | 3     |
| <b>C403</b>   | 3    | 3    | 3    | 3    | 2    | 2    | -    | -    | -    | -    | 2    | 3    | 3     | 3     |

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| Course Code & Name : C404 & CE8012 - Construction, Planning and Scheduling |   |                 |
|--|---|-----------------|
|  | CO Statements   | Knowledge level |
| <b>The students should be able to</b>                                      |   |                 |
| <b>C404.1</b>  | <b>Get a basic knowledge Choice of Technology and Construction method</b> | <b>K1</b>       |
| <b>C404.2</b>  | <b>Understand Use of Advanced Scheduling Techniques</b>                   | <b>K2</b>       |
| <b>C404.3</b>  | <b>Gain knowledge Control of project cash flows.</b>                      | <b>K4</b>       |
| <b>C404.4</b>  | <b>Analyze the Quality Control And Safety During Construction.</b>        | <b>K4</b>       |
| <b>C404.5</b>  | <b>Understand and solve Centralized database Management systems</b>       | <b>K2</b>       |

|                | PO 1 | PO 2     | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | PO 8 | PO 9 | PO1 0 | PO1 1 | PO1 2 | PSO 1 | PSO 2 |
|----------------|------|----------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|
| <b>C404 .1</b> | 3    | 3        | -    | -    | 3    | -    | 2    | -    | -    | -     | -     | 3     | -     | 2     |
| <b>C404 .2</b> | 3    | -        | -    | -    | -    | -    | 2    | -    | -    | -     | 3     | -     | -     | 2     |
| <b>C404 .3</b> | 3    | -        | -    | 2    | -    | -    | -    | -    | -    | -     | -     | 3     | 1     | -     |
| <b>C404 .4</b> | 3    | 3        | -    | 2    | -    | -    | 3    | -    | -    | -     | -     | -     | -     | 2     |
| <b>C404 .5</b> | 3    | 2        | 2    | -    | -    | -    | -    | -    | -    | -     | -     | 3     | -     | 2     |
| <b>C404</b>    | 3    | 2.6<br>7 | 2    | 2    | 3    | -    | 2.3  | -    | -    | -     | 3     | 3     | 1     | 2     |

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| Course Code & Name : C405 & OME754 - Industrial Safety |   |                 |
|--|---|-----------------|
|  | CO Statements   | Knowledge level |
| <b>The students should be able to</b>                  |   |                 |
| C405.1   | Analyze the effect of release of toxic substances                       | K4              |
| C405.2   | Understand the industrial laws, regulations and source models           | K5              |
| C405.3   | Apply the methods of prevention of fire and explosions                  | K3              |
| C405.4   | Understand the relief and its sizing methods                            | K5              |
| C405.5   | Understand the methods of hazard identification and preventive measures | K5              |

|        | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | PO 8 | PO 9 | PO1 0 | PO1 1 | PO1 2 | PSO 1 | PSO 2 |
|--------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|
| C405.1 | -    | -    | 2    | 2    | 2    | -    | -    | -    | -    | -     | -     | 2     | 2     | 2     |
| C405.2 | -    | -    | 2    | 2    | 2    | -    | -    | -    | -    | -     | -     | 2     | 2     | 2     |
| C405.3 | -    | -    | 2    | 2    | 2    | -    | -    | -    | -    | -     | -     | 2     | 2     | 2     |
| C405.4 | -    | -    | 2    | 2    | 2    | -    | -    | -    | -    | -     | -     | 2     | 2     | 2     |
| C405.5 | -    | -    | 2    | 2    | 2    | -    | 2    | -    | -    | -     | -     | 2     | 2     | 2     |
| C405   | -    | -    | 2    | 2    | 2    | -    | 2    | -    | -    | -     | -     | 2     | 2     | 2     |

  
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| Course Code & Name : C406 & CE8711- Creative and Innovative Project |   |                 |
|---|---|-----------------|
|   | CO Statements   | Knowledge level |
| <b>The students should be able to</b>                               |   |                 |
| C406.1  | Able to <b>design</b> any of the Civil Engineering structure                              | K6              |
| C406.2  | <b>Able</b> to interpret data, and synthesis the information to provide valid conclusions | K5              |
| C406.3  | <b>Apply</b> appropriate techniques, modern Engineering tools to engineering activities   | K3              |
| C406.4  | <b>Able</b> to communicate effectively, manage the team or partner                        | K5              |
| C406.5  | <b>Apply</b> ethical principles and commit to professional ethics and responsibilities    | K3              |

|        | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | PO 8 | PO 9 | PO1 0 | PO1 1 | PO1 2 | PSO 1 | PSO 2 |
|--------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|
| C406.1 | 3    | 3    | 2    | 2    | 3    | -    | -    | -    | -    | -     | -     | 3     | 3     | 2     |
| C406.2 | 3    | 3    | 2    | 2    | 3    | -    | -    | -    | -    | -     | -     | 3     | 3     | 2     |
| C406.3 | 3    | 3    | 2    | 2    | 3    | -    | -    | -    | -    | -     | -     | 3     | 3     | 2     |
| C406.4 | 3    | 3    | 2    | 2    | 3    | -    | -    | -    | -    | -     | -     | 3     | 3     | 2     |
| C406.5 | 3    | 3    | 2    | 2    | 3    | -    | -    | -    | -    | -     | -     | 3     | 3     | 2     |
| C406   | 3    | 3    | 2    | 2    | 3    | -    | -    | -    | -    | -     | -     | 3     | 3     | 2     |

  
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| Course Code & Name : C407 & CE8712- Industrial Training |  |                 |
|---|--|-----------------|
|   | CO Statements  | Knowledge level |
| <b>The students should be able to</b>                   |  |                 |
| C407.1  | To intricacies of implementation textbook knowledge into practice in the chosen fields of engineering.   | K3              |
| C407.2  | To understand the concepts of developments and implementation of new techniques by conducting research.  | K2              |
| C407.3  | To understand the importance of sustainability and cost-effectiveness in design and developments of engineering solution.  | K2              |
| C407.4  | To be a multi-skilled engineer with good technical knowledge, management, leadership and entrepreneurship skills through continuous professional development and life-long learning. | K6              |
| C407.5  | To create an awareness of the social, cultural, global and environmental responsibility as an engineer.  | K6              |

|        | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | PO 8 | PO 9 | PO1 0 | PO1 1 | PO1 2 | PSO 1 | PSO 2 |
|--------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|
| C407.1 | 3    | 3    | 2    | 2    | 3    | -    | -    | -    | -    | -     | -     | 3     | 3     | 2     |
| C407.2 | 3    | 3    | 2    | 2    | 3    | -    | -    | -    | -    | -     | -     | 3     | 3     | 2     |
| C407.3 | 3    | 3    | 2    | 2    | 3    | -    | -    | -    | -    | -     | -     | 3     | 3     | 2     |
| C407.4 | 3    | 3    | 2    | 2    | 3    | -    | -    | -    | -    | -     | -     | 3     | 3     | 2     |
| C407.5 | 3    | 3    | 2    | 2    | 3    | -    | -    | -    | -    | -     | -     | 3     | 3     | 2     |
| C407   | 3    | 3    | 2    | 2    | 3    | -    | -    | -    | -    | -     | -     | 3     | 3     | 2     |

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## SEMESTER VIII

Course Code & Name : C408 & CE8020 - Maintenance, Repair & Rehabilitation of Structures

|                                       | CO Statements   | Knowledge level |
|---------------------------------------|---|-----------------|
| <b>The students should be able to</b> |   |                 |
| C408.1                                | To understand the importance of maintenance and assessment method of distressed structures.                   | K2              |
| C408.2                                | To gain knowledge on the strength and durability properties, their effects due to climate and temperature.    | K2              |
| C408.3                                | To get exposures on recent development in concrete and special concrete properties and its application. .     | K2              |
| C408.4                                | To understand the different techniques available for repair and protection methods                            | K2              |
| C408.5                                | To acquire information on repair, rehabilitation, retrofitting of structures and different demolition methods | K2              |

|        | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | PO 8 | PO 9 | PO1 0 | PO1 1 | PO1 2 | PSO 1 | PSO 2 |
|--------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|
| C408.1 | -    | -    | -    | 3    | -    | 3    | -    | 2    | -    | -     | -     | 3     | 2     | -     |
| C408.2 | -    | -    | -    | 3    | -    | 3    | -    | 2    | -    | -     | -     | 3     | 2     | -     |
| C408.3 | -    | -    | -    | 2    | -    | 3    | -    | 2    | -    | -     | -     | 3     | 1     | -     |
| C408.4 | -    | -    | -    | 3    | -    | 3    | -    | 2    | -    | -     | -     | 3     | 2     | -     |
| C408.5 | -    | -    | -    | 3    | -    | 3    | -    | 2    | -    | -     | -     | 2     | 1     | -     |
| C408   | -    | -    | -    | 2.8  | -    | 3    | -    | 2    | -    | -     | -     | 2.8   | 1.6   | -     |

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# J.K.K.MUNIRAJAH COLLEGE OF TECHNOLOGY


(Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai)

Thookanaickenpalayam - 638 506. GOBI TK, ERODE DT, Tamil Nadu.



| Course Code & Name : C409 & CE8013 – COASTAL ENGINEERING |   |                 |
|--|---|-----------------|
|  | CO Statements   | Knowledge level |
| <b>The students should be able to</b>                    |   |                 |
| C409.1   | Understand coastal engineering aspects of harbors methods to improve navigation | K2              |
| C409.2   | Understand the wave properties and analysis of wave.                            | K2              |
| C409.3   | Understand the concepts of sediment transport.                                  | K2              |
| C409.4   | Design of shore defense structures.   | K6              |
| C409.5   | Gain knowledge in modeling in coastal engineering                               | K4              |

|        | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | PO 8 | PO 9 | PO1 0 | PO1 1 | PO1 2 | PSO 1 | PSO 2 |
|--------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|
| C409.1 | 2    | 2    | -    | -    | 2    | 2    | 2    | -    | -    | -     | -     | 2     | 3     | 2     |
| C409.2 | 2    | 2    | -    | -    | 2    | 2    | 2    | -    | -    | -     | -     | 2     | 3     | 2     |
| C409.3 | 2    | 2    | -    | -    | 2    | 2    | 2    | -    | -    | -     | -     | 2     | 3     | 2     |
| C409.4 | 2    | 2    | -    | -    | 2    | 2    | 2    | -    | -    | -     | -     | 2     | 3     | 2     |
| C409.5 | 2    | 2    | -    | -    | 2    | 2    | 2    | -    | -    | -     | -     | 2     | 3     | 2     |
| C409   | 2    | 2    | -    | -    | 2    | 2    | 2    | -    | -    | -     | -     | 2     | 3     | 2     |

  
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Thookanaickenpalayam - 638 506. GOBI TK, ERODE DT, Tamil Nadu.



| Course Code & Name : C410 & CE8811- Project Work |   |                 |
|--|---|-----------------|
|  | CO Statements   | Knowledge level |
| <b>The students should be able to</b>            |   |                 |
| CO410.1  | To understand professional and ethical responsibilities.  | K2              |
| CO410.2  | An ability to use of various techniques, engineering knowledge and skill, and modern engineering tools necessary for planning, analysis and designing of engineering projects like building, roads, geotechnical works/problems | K2              |
| CO410.3  | Recognition of the need for new raw materials and ability to use them in the construction materials.  | K4              |
| CO410.4  | Knowledge of contemporary issues in the environment.  | K3              |
| CO410.5  | Ability to handle the challenging issues and formulate the solutions for it.  | K2              |

|          | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | PO 8 | PO 9 | PO1 0 | PO1 1 | PO1 2 | PSO 1 | PSO 2 |
|----------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|
| CO410 .1 | 3    | 3    | 2    | 2    | 3    | -    | -    | -    | -    | -     | -     | 3     | 3     | 2     |
| CO410 .2 | 3    | 3    | 2    | 2    | 3    | -    | -    | -    | -    | -     | -     | 3     | 3     | 2     |
| CO410 .3 | 3    | 3    | 2    | 2    | 3    | -    | -    | -    | -    | -     | -     | 3     | 3     | 2     |
| CO410 .4 | 3    | 3    | 2    | 2    | 3    | -    | -    | -    | -    | -     | -     | 3     | 3     | 2     |
| CO410 .5 | 3    | 3    | 2    | 2    | 3    | -    | -    | -    | -    | -     | -     | 3     | 3     | 2     |
| C0410    | 3    | 3    | 2    | 2    | 3    | -    | -    | -    | -    | -     | -     | 3     | 3     | 2     |

*Sreedh*

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