



# AMAL JYOTHI

## COLLEGE OF ENGINEERING

KANJIRAPPALLY, KOTTAYAM, INDIA 686 518

AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, KERALA



**NAAC**  
NATIONAL ASSESSMENT AND  
ACCREDITATION COUNCIL

| **'A' Grade**

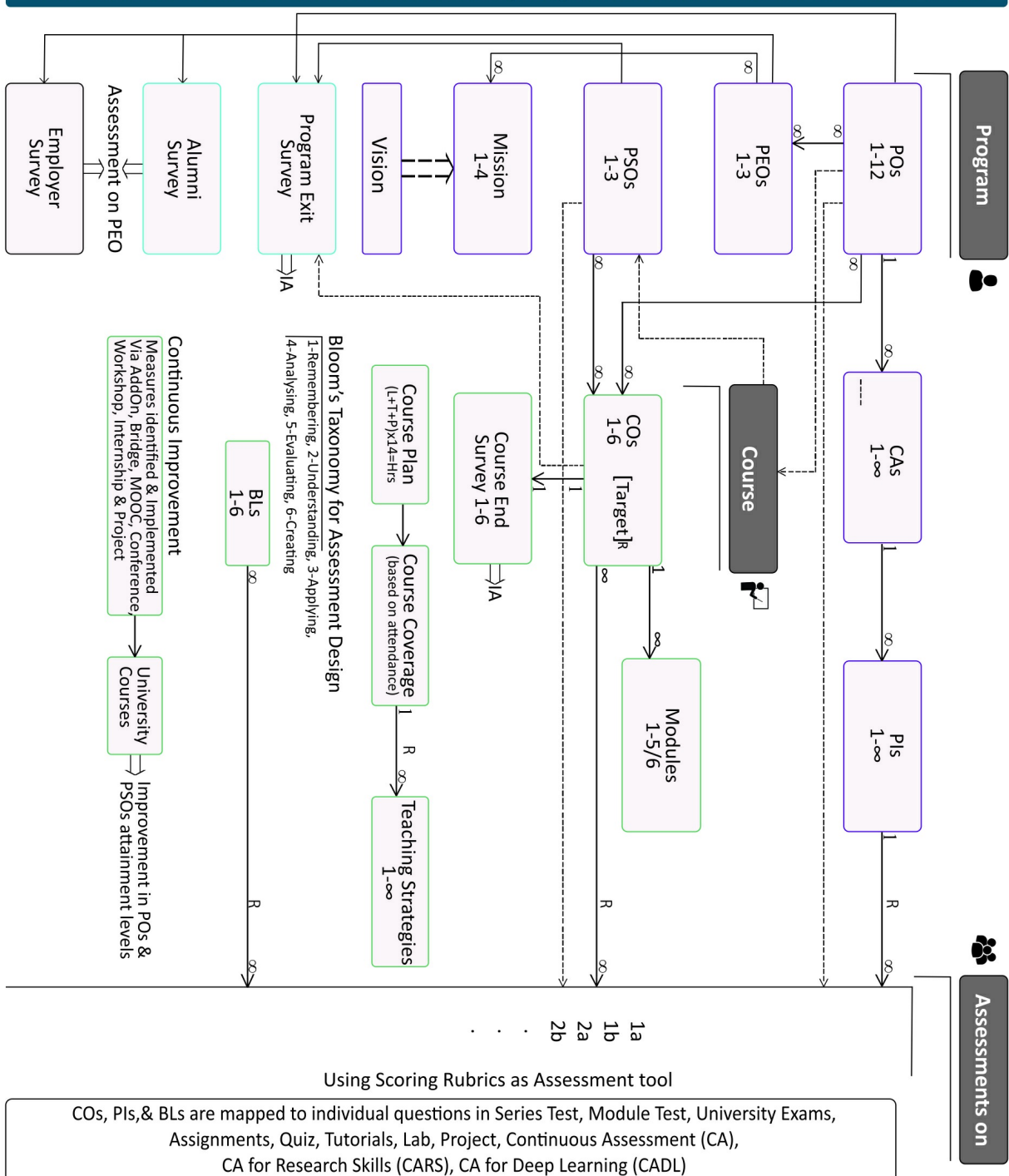
CIVIL ENGINEERING

**Outcome Based Education Scheme**

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# OUTCOME BASED EDUCATION FRAMEWORK (OBE) IN ACADEMIC ENTERPRISE SOLUTIONS



<b>Weighted Average (WA)</b>
$\frac{(n1 \cdot 1 + n2 \cdot 2 + n3 \cdot 3)}{n1 + n2 + n3}$
n : No of students, multiplied with 3 scale value
<b>Direct Assessment of CO</b>
$\frac{(33.33 \cdot \text{Internals WA} + 66.66 \cdot \text{Externals WA})}{100}$
<b>Direct Assessment of PO / PSO</b>
I. Course1.CO1-PO1   PSO1 Score=CO1 Attainment Score * CO1-PO1   PSO1 Mpscore.
II. DA of PO1   PSO1 = [Course1.CO1-01   PSO1 Score + Course1.CO2-PO1   PSO1 Score + ... + nthCourse.nthCO-PO1   PSO1 Score] / [Course1.CO1-PO1   PSO1 Mpscore + Course1.CO2-PO1   PSO1 Mpscore + ... + nthCourse.nthCO-PO1   PSO1 Mpscore]
<b>Indirect Assessment for CO / PO / PSO</b>
Weighted Average on 3-point scale from Course End Survey -> IA for CO Program Exit Survey -> IA for PO   PSO
<b>CO / PO / PSO Attainment</b>
$\frac{(80 \cdot \text{DA} + 20 \cdot \text{IA})}{100}$
DA: Direct Assessment, IA: Indirect Assessment
PO Program Outcome
PEO Program Educational Objective
PSO Program Specific Outcome
CAs Competencies to be Attained
PIs Performance Indicators
COs Course Outcomes   R Repeated Yearly
BLs Blooms Taxonomy Levels
Mapping ----> Auto Mapping
Correlation
3-Substantial (High)/2-Moderate(Medium)/1-Slight (Low)

## VISION

### B.Tech

To be a premium provider of technical higher education, research and support services in the field of civil engineering, capable of moulding individuals with the requisite technical background to empower the society.

### M.Tech

To be a premium provider of technical higher education, research and support services in the field of civil engineering, capable of moulding individuals with the requisite technical background to empower the society.

## MISSION

### B.Tech

- To generate technically sound civil engineer with the help of practice oriented courses and industry interaction
- To nurture ethically responsible professionals through consistent exposure to latest technologies
- To create engineers capable of initiating sustainable engineering practice

### M.Tech

- To generate technically sound civil engineer with the help of practice oriented courses and industry interaction
- To nurture ethically responsible professionals through consistent exposure to latest technologies
- To create engineers capable of initiating sustainable engineering practice

## PROGRAM OUTCOME

### B.Tech-Civil Engineering

Sl.No.	Outcome
PO1	Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals and civil engineering specialization to the solution of complex civil engineering problems.
PO2	Problem analysis: Identify, formulate, review research literature, and analyze complex civil engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences
PO3	Design/development of solutions: Design solutions for complex civil 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	Conduct investigations of complex problems: 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	Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex civil engineering activities with an understanding of the limitations.

PO6	The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional civil engineering practice
PO7	Environment and sustainability: Understand the impact of professional civil engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO8	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of civil engineering practice.
PO9	Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO10	Communication: Communicate effectively on complex civil 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	Project management and finance: Demonstrate knowledge and understanding of civil 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 environment.
PO12	Life-long learning: 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.

#### M.Tech-Struct Engg & Construction Management

Sl.No.	Outcome
PO1	Scholarship of Knowledge- Acquire in-depth knowledge of structural engineering and construction management, including wider and global perspective, with an ability to discriminate, evaluate, analyse and synthesise existing and new knowledge, and integration of the same for enhancement of knowledge.
PO2	Critical Thinking -Analyse complex engineering problems critically, apply independent judgement for synthesising information to make intellectual and/or creative advances for conducting research in a wider theoretical, practical and policy context.
PO3	Problem Solving- Think laterally and originally, conceptualise and solve engineering problems, evaluate a wide range of potential solutions for those problems and arrive at feasible, optimal solutions after considering public health and safety, cultural, societal and environmental factors in the core areas of expertise.
PO4	Research Skill -Extract information pertinent to unfamiliar problems through literature survey and experiments, apply appropriate research methodologies, techniques and tools, design, conduct experiments, analyse and interpret data, demonstrate higher order skill and view things in a broader perspective, contribute individually/in group(s) to the development of scientific/technological knowledge in one or more domains of engineering.

PO5	Usage of modern tools- Create, select, learn and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to complex engineering activities with an understanding of the limitations.
PO6	Collaborative and Multidisciplinary work -Possess knowledge and understanding of group dynamics, recognise opportunities and contribute positively to collaborative-multidisciplinary scientific research, demonstrate a capacity for self-management and teamwork, decision-making based on open-mindedness, objectivity and rational analysis in order to achieve common goals and further the learning of themselves as well as others.
PO7	Project Management and Finance - Demonstrate knowledge and understanding of engineering and management principles and apply the same to one's own work, as a member and leader in a team, manage projects efficiently in respective disciplines and multidisciplinary environments after consideration of economical and financial factors.
PO8	Communication -Communicate with the engineering community, and with society at large, regarding complex engineering activities confidently and effectively, such as, being able to comprehend and write effective reports and design documentation by adhering to appropriate standards, make effective presentations, and give and receive clear instructions.
PO9	Life-long Learning -Recognise the need for, and have the preparation and ability to engage in life-long learning independently, with a high level of enthusiasm and commitment to improve knowledge and competence continuously.
PO10	Ethical Practices and Social Responsibility -Acquire professional and intellectual integrity, professional code of conduct, ethics of research and scholarship, consideration of the impact of research outcomes on professional practices and an understanding of responsibility to contribute to the community for sustainable development of society.
PO11	Independent and Reflective Learning-Observe and examine critically the outcomes of one's actions and make corrective measures subsequently, and learn from mistakes without depending on external feedback.

#### M.Tech-Computer Aided Structural Engineering

Sl.No.	Outcome
PO1	Scholarship of Knowledge - Acquire in-depth knowledge of structural engineering, including wider and global perspective, with an ability to discriminate, evaluate, analyse and synthesise existing and new knowledge, and integration of the same for enhancement of knowledge.
PO2	Critical Thinking -Analyse complex engineering problems critically, apply independent judgement for synthesising information to make intellectual and/or creative advances for conducting research in a wider theoretical, practical and policy context.
PO3	Problem Solving- Think laterally and originally, conceptualise and solve engineering problems, evaluate a wide range of potential solutions for those problems and arrive at feasible, optimal solutions after considering public health and safety, cultural, societal and environmental factors in the core areas of expertise.

PO4	Research Skill -Extract information pertinent to unfamiliar problems through literature survey and experiments, apply appropriate research methodologies, techniques and tools, design, conduct experiments, analyse and interpret data, demonstrate higher order skill and view things in a broader perspective, contribute individually/in group(s) to the development of scientific/technological knowledge in one or more domains of engineering.
PO5	Usage of modern tools- Create, select, learn and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to complex engineering activities with an understanding of the limitations.
PO6	Collaborative and Multidisciplinary work -Possess knowledge and understanding of group dynamics, recognise opportunities and contribute positively to collaborative-multidisciplinary scientific research, demonstrate a capacity for self-management and teamwork, decision-making based on open-mindedness, objectivity and rational analysis in order to achieve common goals and further the learning of themselves as well as others.
PO7	Project Management and Finance - Demonstrate knowledge and understanding of engineering and management principles and apply the same to one's own work, as a member and leader in a team, manage projects efficiently in respective disciplines and multidisciplinary environments after consideration of economical and financial factors.
PO8	Communication -Communicate with the engineering community, and with society at large, regarding complex engineering activities confidently and effectively, such as, being able to comprehend and write effective reports and design documentation by adhering to appropriate standards, make effective presentations, and give and receive clear instructions.
PO9	Life-long Learning -Recognise the need for, and have the preparation and ability to engage in life-long learning independently, with a high level of enthusiasm and commitment to improve knowledge and competence continuously.
PO10	Ethical Practices and Social Responsibility -Acquire professional and intellectual integrity, professional code of conduct, ethics of research and scholarship, consideration of the impact of research outcomes on professional practices and an understanding of responsibility to contribute to the community for sustainable development of society.
PO11	Independent and Reflective Learning-Observe and examine critically the outcomes of one's actions and make corrective measures subsequently, and learn from mistakes without depending on external feedback.

#### PhD-PhD in Civil Engineering

### PROGRAM EDUCATIONAL OBJECTIVE

#### B.Tech-Civil Engineering

Sl.No.	Objective
PEO1	To proactively work as responsible professionals effectively discharging their duties in an independent or team environment in civil engineering or related fields

PEO2	To pursue lifelong learning in furtherance of research or other specific career programs
PEO3	To effectively address challenging problems in civil engineering or related fields by providing sustainable solutions using modern tools

#### **M.Tech-Struct Engg & Construction Management**

Sl.No.	Objective
PEO1	Demonstrate competency to lead and discharge their duties in an independent or team environment in structural engineering and construction management or related fields
PEO2	To exhibit skills for lifelong learning in furtherance of research or other specific career programs through constant knowledge up-gradation
PEO3	Apply fundamental and advanced knowledge in structural engineering and construction management to effectively address challenging problems in civil engineering or related fields and provide sustainable solutions using modern tools.

#### **M.Tech-Computer Aided Structural Engineering**

Sl.No.	Objective
PEO1	Demonstrate competency to lead and discharge their duties in an independent or team environment in structural engineering or related fields
PEO2	To exhibit skills for lifelong learning in furtherance of research or other specific career programs through constant knowledge up-gradation
PEO3	Apply fundamental and advanced knowledge in structural engineering to effectively address challenging problems in civil engineering or related fields and provide sustainable solutions using modern tools.

#### **PhD-PhD in Civil Engineering**

### **PROGRAM SPECIFIC OUTCOME**

#### **B.Tech-Civil Engineering**

Sl.No.	Outcome
PSO1	To identify, formulate and solve civil engineering problems by applying knowledge of science, mathematics and engineering leveraging skills, techniques and various modern tools
PSO2	To meet desired economic, environmental, ethical, and sustainability constraints while designing civil engineering system or elements



PSO3	To manifest professional and ethical responsibilities while discharging duties
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#### M.Tech-Struct Engg & Construction Management

Sl.No.	Outcome
PSO1	To enable students to modify and upgrade the present computing techniques to meet the increasing challenges in structural engineering and construction management
PSO2	To bring awareness to the students to have commitment in the socioeconomic progress of the society.

#### M.Tech-Computer Aided Structural Engineering

Sl.No.	Outcome
PSO1	To enable students to modify and upgrade the present computing techniques to the meet the increasing challenges in structural engineering.
PSO2	To bring awareness to the students to have commitment in the socioeconomic progress of the society.

#### PhD-PhD in Civil Engineering

### COMPETENCIES & PERFORMANCE INDICATORS

#### B.Tech-Civil Engineering

##### 1.1 Demonstrate competence in mathematical modelling

- 1.1.1 Apply mathematical techniques such as calculus, linear algebra. and statistics modelling to solve problems
- 1.1.2 Apply advanced mathematical techniques to model and solve engineering problems

##### 1.2 Demonstrate competence in basic sciences

- 1.2.1 Apply laws of natural science to an engineering problem

##### 1.3 Demonstrate competence in engineering fundamentals

- 1.3.1 Apply fundamental engineering concepts to solve engineering problems

##### 1.4 Demonstrate competence in specialized engineering knowledge to the program

- 1.4.1 Apply engineering concepts to solve engineering problems

##### 2.1 Demonstrate an ability to identify and formulate complex engineering problem

- 2.1.1 Articulate problem statements and identify objectives
- 2.1.2 Identify engineering systems, variables, and parameters to solve the problems
- 2.1.3 Identify the mathematical, engineering and other relevant knowledge that applies to a given problem

## 2.2 Demonstrate an ability to formulate a solution plan and methodology for an engineering problem

- 2.2.1 Reframe complex problems into Interconnected sub-problems
- 2.2.2 Identify assemble and evaluate information and resources
- 2.2.3 Identify existing processes/solution methods for solving the problem including forming justified approximations and assumptions
- 2.2.4 Compare and contrast alternative solution processes to select the best process

## 2.3 Demonstrate an ability to formulate and interpret a model

- 2.3.1 Combine scientific principles and engineering concepts to formulate model's (mathematical or otherwise) al a system or process that is appropriate in terms of applicability and required accuracy
- 2.3.2 Identify assumptions (mathematical and physical) necessary to allow modeling of a system at the level of accuracy required

## 2.4 Demonstrate an ability to execute a solution process and analyze results

- 2.4.1 Apply engineering mathematics and computations to solve mathematical models
- 2.4.2 Produce and validate results through skillful use of contemporary engineering tools and models
- 2.4.3 Identify sources of error in the solution process, and limitations of the solution
- 2.4.4 Extract desired understanding and conclusions consistent with objectives and limitations of the analysis

## 3.1 Demonstrate an ability to define a complex open-ended problem in engineering terms

- 3.1.1 Recognize that need analysis is key to good problem definition
- 3.1.2 Elicit and document, engineering requirements from stakeholders
- 3.1.3 Synthesize engineering requirements from a review of the state-of-the-art
- 3.1.4 Extract engineering requirements from relevant engineering Codes and Standards such as ASME, ASTM, BIS, ISO and ASHRAE
- 3.1.5 Explore and synthesize engineering requirements considering health, safety risks. environmental cultural and societal issues
- 3.1.6 Determine design objectives, functional requirements and arrive at specifications

## 3.2 Demonstrate an ability to generate a diverse set of alternative design solutions

- 3.2.1 Apply formal idea generation tools to develop multiple engineering design solutions
- 3.2.2 Build models/prototypes to develop a diverse set of design solutions
- 3.2.3 Identity suitable criteria for the evaluation of alternative design solutions

### 3.3 Demonstrate an ability to select an optimal design scheme for further development

- 3.3.1 Apply formal decision-making tools to select optimal engineering design solutions for further development
- 3.3.2 Consult with domain experts and stakeholders to select candidate engineering design solution for further development

### 3.4 Demonstrate an ability to advance an engineering design to defined end state

- 3.4.1 Refine a conceptual design into a detailed design within the existing constraints of the resources)
- 3.4.2 Generate information through appropriate tests to improve or revise the design

### 4.1 Demonstrate an ability to conduct investigations of technical issues consistent with their level of knowledge system and understanding

- 4.1.1 Define a problem, its scope and importance for purposes of investigation
- 4.1.2 Examine the relevant methods, tools and techniques of experiment design calibration, data acquisition, analysis and presentation
- 4.1.3 Apply appropriate instrumentation and/or software tools to make measurements of physical quantities
- 4.1.4 Establish a relationship between measured data and underlying physical principles

### 4.2 Demonstrate an ability to design experiments to solve open-ended problems

- 4.2.1 Design and develop an experimental approach specify appropriate equipment and procedures
- 4.2.2 Understand the importance of the statistical design of experiments and choose an appropriate experimental design plan based on the study objectives

### 4.3 Demonstrate an ability to analyze data and reach a valid conclusion

- 4.3.1 Use appropriate procedures, tools and techniques to conduct experiments and collect data
- 4.3.2 Analyze data for trends and correlations, stating possible errors and limitations
- 4.3.3 Represent data (in tabular and/or graphical forms) so as to facilitate analysis and explanation of the data, and drawing of conclusions
- 4.3.4 Synthesize information and knowledge about the problem from the raw data to reach appropriate conclusions

### 5.1 Demonstrate an ability to identify/ create modern engineering tools, techniques and resources

5.1.1 Identify modern engineering tools such as computer-aided drafting, modeling and analysis techniques and resources for engineering activities

5.1.2 Create adapt modify/extend tools and techniques to solve engineering problems

## 5.2 Demonstrate an ability to select and apply discipline-specific tools, techniques and resources

5.2.1 Identify the strengths and limitations of tools for (i) acquiring information (ii) modeling and simulating, (iii) monitoring system performance, and (iv) creating engineering designs.

5.2.2 Demonstrate proficiency in using discipline-specific tools

## 5.3 Demonstrate an ability to evaluate the suitability and limitations of tools used to solve an engineering problem

5.3.1 Discuss limitations and validate tools, techniques and resources

5.3.2 Verify the credibility of results from tool use with reference to the accuracy and limitations, and the assumptions inherent in their use

## 6.1 Demonstrate an ability to describe engineering roles in a broader context e.g. pertaining to the environment, safety, health, legal and public welfare

6.1.1 Identify and describe various engineering roles: particularly as pertains to , protection of the public and public interest at the global, regional and local level

## 6.2 Demonstrate an understanding of professional engineering regulations, legislation and standards

6.2.1 Interpret legislation, regulations, codes, and standards relevant to your discipline and explain its contribution to the protection of the public

## 7.1 Demonstrate an understanding of the impact of engineering and industrial practices on social, environmental and in economic contexts

7.1.1 Identify risks/impacts in the life-cycle of an engineering product or activity

7.1.2 Understand the relationship between the technical, socio-economic and environmental dimensions of sustainability

## 7.2 Demonstrate an ability to apply principles of sustainable design and development

7.2.1 Describe management techniques for sustainable development

7.2.2 Apply principles of preventive engineering and sustainable development to an engineering activity or product relevant to the discipline

## 8.1 Demonstrate an ability to recognize ethical dilemmas

8.1.1 Identify situations of unethical professional conduct and propose ethical alternatives

## 8.2 Demonstrate an ability to apply the Code of Ethics

- 8.2.1 Identity tenets of the ASME professional code of ethics
- 8.2.2 Examine and apply moral & ethical principles to known case studies

#### 9.1 Demonstrate an ability to form a team and define a role for each member

- 9.1.1 Recognize a variety of working and learning preferences, appreciate the value of diversity on a team
- 9.1.2 Implement the norms of practice (e.g rules, roles, charters, agendas, etc.) of effective team work, to accomplish a goal.

#### 9.2 Demonstrate effective individual and team operations communication, problem-solving, conflict resolution and leadership skills

- 9.2.1 Demonstrate effective communication, problem-solving conflict resolution and leadership skills
- 9.2.2 Treat other team members respectfully
- 9.2.3 Listen to other members
- 9.2.4 Maintain composure in difficult situations

#### 9.3 Demonstrate success in a team-based project

- 9.3.1 Present results as a team with smooth integration of contributions from all Individual efforts

#### 10.1 Demonstrate an ability to comprehend technical literature and document project work

- 10.1.1 Read, understand and interpret technical and non-technical information
- 10.1.2 Produce clear, well-constructed and well-supported written engineering documents
- 10.1.3 Create flow in a document or presentation - a logical progression of ideas so that the main point is clear

#### 10.2 Demonstrate competence in listening, speaking, and presentation

- 10.2.1 Listen to and comprehend information Instructions and viewpoints of others
- 10.2.2 Deliver effective oral presentations to technical and non-technical audiences

#### 10.3 Demonstrate the ability to integrate different modes of communication

- 10.3.1 Create engineering-standard figures, reports and drawings to complement writing and presentations
- 10.3.2 Use a variety of media effectively to convey a message in a document or a presentation

#### 11.1 Demonstrate an ability to evaluate the Economic and financial performance of an engineering activity

- 11.1.1 Describe various economic and financial casts/benefits of an engineering activity
- 11.1.2 Analyze different forms of financial statements to evaluate the financial status of an engineering project

11.2 Demonstrate an ability to compare and contrast the costs/benefits of alternate proposals for an engineering activity

11.2.1 Analyze and select the most appropriate proposal based on economic and financial considerations

11.3 Demonstrate an ability to plan/manage an engineering activity within time and budget constraints

11.3.1 Identify the tasks required to complete an engineering activity and the resources required to complete the tasks

11.3.2 Use project management tools to schedule an engineering project so it is completed on time and on budget

12.1 Demonstrate an ability to identify gaps in knowledge and a strategy to close these gaps

12.1.1 Describe the rationale for the requirement for continuing professional development

12.1.2 Identify deficiencies or gaps in knowledge and demonstrate an ability to Source information to close this gap

12.2 Demonstrate an ability to identify changing trends in engineering knowledge and practice

12.2.1 Identify historic points of technological advance in engineering that required practitioners to seek education in order to stay current

12.2.2 Recognize the need and be able to clearly explain why it is vitally important to keep current regarding new developments in your field

12.3 Demonstrate an ability to identify and access sources for new information

12.3.1 Source and comprehend technical literature and other credible sources of information

12.3.2 Analyze sourced technical and popular information for feasibility, viability, sustainability, etc.

#### **M.Tech-Struct Engg & Construction Management**

1.1 Demonstrate competence in engineering fundamentals and in structural engineering and construction management

1.1.1 Apply engineering concepts to solve engineering problems

2.1 Demonstrate an ability to identify , formulate or conduct research for a complex engineering problem, execute a solution process to analyse result

2.1.1 Identify the mathematical, engineering and other relevant knowledge that applies to a given problem, Compare and contrast alternative solution processes to select the best process, Extract desired understanding and conclusions consistent with objectives and limitations of the analysis

3.1 Demonstrate an ability to define a complex open-ended problem in engineering terms, generate a diverse set of alternative design solutions with an understanding of professional engineering regulations, legislation and standards

- 3.1.1 Determine design objectives, functional requirements and arrive at specifications, identify suitable criteria for the evaluation of alternative design solutions in line with professional engineering regulations, legislation and standards

- 4.1 Demonstrate an ability to conduct investigations of technical issues consistent with their level of knowledge system and understanding, design experiments and analyse data

- 4.1.1 Define a problem, its scope and importance for purposes of investigation, use appropriate procedures, tools and techniques to conduct experiments and collect data, Synthesize information and knowledge about the problem from the raw data to reach appropriate conclusions

- 5.1 Demonstrate an ability to identify/ create, select, apply modern engineering tools, techniques and resources

- 5.1.1 Demonstrate proficiency in using discipline-specific tools

- 6.1 Demonstrate effective individual and team operations communication, problem-solving, conflict resolution and leadership skills and demonstrate success in a team-based project

- 6.1.1 Demonstrate effective communication, problem-solving conflict resolution and leadership skills, Present results as a team with smooth integration of contributions from all Individual efforts

- 7.1 Demonstrate an ability to evaluate the economic and financial performance, compare and contrast the costs/benefits of alternate proposals and plan/manage an engineering activity within time and budget constraints

- 7.1.1 Analyze different forms of financial statements to evaluate the financial status of an engineering project, use project management tools to schedule an engineering project so it is completed on time and on budget

- 8.1 Demonstrate an ability to comprehend technical literature and document project work, competence in listening, speaking, and presentation, ability to integrate different modes of communication

- 8.1.1 Create flow in a document or presentation - a logical progression of ideas so that the main point is clear, Deliver effective oral presentations to technical and non-technical audiences, Create engineering-standard figures, reports and drawings to complement writing and presentations

- 9.1 Demonstrate an ability to identify knowledge gaps in knowledge and a strategy, changing trends in engineering knowledge and practice and access sources for new information

- 9.1.1 Recognize the need and be able to clearly explain why it is vitally important to keep current regarding new developments in your field and analyze sourced technical and popular information for feasibility, viability, sustainability, etc.

- 10.1 Demonstrate an ability to recognize ethical dilemmas and apply the Code of Ethics

- 10.1.1 Identify situations of unethical professional conduct, propose and apply moral and ethical principles

- 11.1 Demonstrate an ability to adapt a solution

- 11.1.1 Identify the flaws, corrective measures to improve an existing system

#### **M.Tech-Computer Aided Structural Engineering**

## 1.1 Demonstrate competence in engineering fundamentals and in structural engineering

### 1.1.1 Apply engineering concepts to solve engineering problems

## 2.1 Demonstrate an ability to identify , formulate or conduct research for a complex engineering problem, execute a solution process to analyse result

### 2.1.1 Identify the mathematical, engineering and other relevant knowledge that applies to a given problem, Compare and contrast alternative solution processes to select the best process, Extract desired understanding and conclusions consistent with objectives and limitations of the analysis

## 3.1 Demonstrate an ability to define a complex open-ended problem in engineering terms, generate a diverse set of alternative design solutions with an understanding of professional engineering regulations, legislation and standards

### 3.1.1 Determine design objectives, functional requirements and arrive at specifications, identify suitable criteria for the evaluation of alternative design solutions in line with professional engineering regulations, legislation and standards

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### 4.1.1 Define a problem, its scope and importance for purposes of investigation, use appropriate procedures, tools and techniques to conduct experiments and collect data, Synthesize information and knowledge about the problem from the raw data to reach appropriate conclusions

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## 7.1 Demonstrate an ability to evaluate the economic and financial performance ,compare and contrast the costs/benefits of alternate proposals and plan/manage an engineering activity within time and budget constraints

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## 9.1 Demonstrate an ability to identify identity gaps in knowledge and a strategy ,changing trends in engineering knowledge and practice and access sources for new information



- 9.1.1 Recognize the need and be able to clearly explain why it is vitally important to keep current regarding new developments in your field and analyze sourced technical and popular information for feasibility, viability, sustainability, etc.

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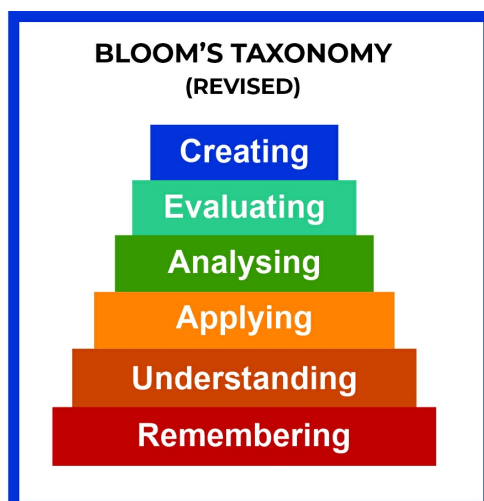
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- 11.1.1 Identify flaws and corrective measures to improve an existing system

**PhD-PhD in Civil Engineering**

## BLOOM'S TAXONOMY FOR ASSESSMENT DESIGN



**Fig. : Revised Bloom's Taxonomy**

Level	Descriptor	Level of attainment
1	Remembering	Recalling from the memory of the previously learned material
2	Understanding	Explaining ideas or concepts
3	Applying	Using the information in another familiar situation
4	Analysing	Breaking information into the part to explore understandings and relationships
5	Evaluating	Justifying a decision or course of action
6	Creating	Generating new ideas, products or new ways of viewing things

Level	Skill Demonstrated	Question cues / Verbs for tests
1. Remember	<ul style="list-style-type: none"> <li>Ability to recall of information like facts, conventions, definitions, jargon, technical terms, classifications, categories, and criteria</li> <li>ability to recall methodology and procedures, abstractions, principles, and theories in the field</li> <li>knowledge of dates, events, places</li> <li>mastery of subject matter</li> </ul>	list, define, tell, describe, recite, recall, identify, show, label, tabulate, quote, name, who, when, where
2. Understand	<ul style="list-style-type: none"> <li>understanding information</li> <li>grasp meaning</li> <li>translate knowledge into new context</li> <li>interpret facts, compare, contrast</li> <li>order, group, infer causes</li> <li>predict consequences</li> </ul>	describe, explain, paraphrase, restate, associate, contrast, summarize, differentiate interpret, discuss
3. Apply	<ul style="list-style-type: none"> <li>use information</li> <li>use methods, concepts, laws, theories in new situations</li> <li>solve problems using required skills or knowledge</li> <li>Demonstrating correct usage of a method or procedure</li> </ul>	calculate, predict, apply, solve, illustrate, use, demonstrate, determine, model, experiment, show, examine, modify
4. Analyse	<ul style="list-style-type: none"> <li>break down a complex problem into parts</li> <li>Identify the relationships and interaction between the different parts of a complex problem</li> <li>identify the missing information, sometimes the redundant information and the contradictory information, if any</li> </ul>	classify, outline, break down, categorize, analyze, diagram, illustrate, infer, select
5. Evaluate	<ul style="list-style-type: none"> <li>compare and discriminate between ideas</li> <li>assess value of theories, presentations</li> <li>make choices based on reasoned argument</li> <li>verify value of evidence</li> <li>recognize subjectivity</li> <li>use of definite criteria for judgments</li> </ul>	assess, decide, choose, rank, grade, test, measure, defend, recommend, convince, select, judge, support, conclude, argue, justify, compare, summarize, evaluate
6. Create	<ul style="list-style-type: none"> <li>use old ideas to create new ones</li> <li>Combine parts to make (new) whole,</li> <li>generalize from given facts</li> <li>relate knowledge from several areas</li> <li>predict, draw conclusions</li> </ul>	design, formulate, build, invent, create, compose, generate, derive, modify, develop, integrate

## TEACHING - LEARNING STRATEGIES

1. BLENDED LEARNING
2. BRAINSTORMING
3. CASE STUDY
4. COMPUTER AIDED PRESENTATION
5. COMPUTER LABS/LAPTOP INSTRUCTION
6. DEMONSTRATION
7. DIRECT INSTRUCTION
8. DISCOVERY LEARNING
9. DISCUSSION
10. DRILL AND PRACTICE
11. EXAMINATION
12. FLIPPED CLASS
13. FULLY ONLINE INSTRUCTION
14. GROUP ACTIVITIES
15. INQUIRY
16. LECTURE
17. MENTAL MODELING
18. MOOC ONLINE
19. PROJECT DEVELOPMENT
20. PROJECT PRESENTATION
21. QUESTION AND ANSWER
22. ROLE PLAY
23. SELF-LEARNING
24. SEMINAR
25. TUTORIAL
26. WEB-ENHANCED LEARNING

## PO-CA-PI MAPPING SUMMARY

### B.Tech-Civil Engineering

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
No CAs	4	4	4	3	3	2	2	2	3	3	3	3
No PIs	5	13	13	10	6	2	4	3	7	7	5	6

### M.Tech-Struct Engg & Construction Management

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
No CAs	1	1	1	1	1	1	1	1	1	1	1
No PIs	1	1	1	1	1	1	1	1	1	1	1

### M.Tech-Computer Aided Structural Engineering

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
No CAs	1	1	1	1	1	1	1	1	1	1	1
No PIs	1	1	1	1	1	1	1	1	1	1	1

### PhD-PhD in Civil Engineering

## PEO-PO MAPPING

*Correlation Levels: 1: Slight (Low), 2: Moderate (Medium), 3: Substantial (High), empty – no correlation*

### B.Tech-Civil Engineering

PEO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
PEO1	2	3	2	1	3	3	2	3	3	3	3	3
PEO2	3	3	3	3	3	1	3	2	2	3	2	3
PEO3	3	3	3	3	3	3	3	2	2	2	2	2

### M.Tech-Struct Engg & Construction Management

PEO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
PEO1	2	3	3	3	3	3	3	3	3	3	3
PEO2	3	2	2	3	3	3	1	2	3	1	3
PEO3	3	3	3	3	3	3	3	3	2	1	3

### M.Tech-Computer Aided Structural Engineering

PEO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
PEO1	2	3	3	3	3	3	3	3	3	3	3
PEO2	3	2	2	3	3	3	1	2	3	1	3
PEO3	3	3	3	3	3	3	3	3	2	1	3

PhD-PhD in Civil Engineering

## PEO-MISSION MAPPING

B.Tech-Civil Engineering

PEO/MISSION	MS1	MS2	MS3
PEO1	3	3	3
PEO2	3	3	3
PEO3	3	3	3

M.Tech-Struct Engg & Construction Management

PEO/MISSION	MS1	MS2	MS3
PEO1	3	3	3
PEO2	3	3	3
PEO3	3	3	3

M.Tech-Computer Aided Structural Engineering

PEO/MISSION	MS1	MS2	MS3
PEO1	3	3	3
PEO2	3	3	3
PEO3	3	3	3

PhD-PhD in Civil Engineering

## PROGRAM EXIT SURVEY

B.Tech-Civil Engineering

Sl.No.	The extent to which engineering education has enhanced your ability to:
--------	---

1	Apply the knowledge of mathematics, physics, chemistry and basic engineering to solve Engineering problems
	<i>Very Strong, Strong, Average, weak , Very Weak</i>
2	Identify, formulate and analyze complex Engineering problems and derive meaningful conclusions using principles of mathematics, science and engineering
	<i>Very Strong, Strong, Average, weak , Very Weak</i>
3	Design efficient processes and develop high quality products giving due consideration to safety, environmental issues and economic aspects
	<i>Very Strong, Strong, Average, weak , Very Weak</i>
4	Conduct investigation of complex Engineering problems using research based methods, analyze and interpret data to draw valid conclusions
	<i>Very Strong, Strong, Average, weak , Very Weak</i>
5	Acquire skills to select and use modern engineering tools and software for modeling, simulation and solution of complex Engineering problems
	<i>Very Strong, Strong, Average, weak , Very Weak</i>
6	Apply contextual knowledge to assess societal, health, safety, legal and cultural issues in professional practice to become a responsible engineer
	<i>Very Strong, Strong, Average, weak , Very Weak</i>
7	Understand the societal and environmental impacts of applying Engineering to solve real life problems and practice sustainable development
	<i>Very Strong, Strong, Average, weak , Very Weak</i>
8	Work with full commitment to professional and ethical responsibilities as an engineer
	<i>Very Strong, Strong, Average, weak , Very Weak</i>
9	Work individually in a team or as a leader in any demanding or challenging environment
	<i>Very Strong, Strong, Average, weak , Very Weak</i>

10	Communicate effectively with engineering community or the society at large through appropriate reports, designs, presentations and instructions
	<i>Very Strong, Strong, Average, weak , Very Weak</i>
11	Engage in life-long learning in the broadest context of developments in technology for continuous professional development
	<i>Very Strong, Strong, Average, weak , Very Weak</i>
12	Understand engineering and management principles and apply these to manage multidisciplinary projects and finance as an individual or as a member or leader of a team
	<i>Very Strong, Strong, Average, weak , Very Weak</i>
13	How far the student is able to identify, formulate and solve civil engineering problems by applying knowledge of science, mathematics and engineering leveraging skills, techniques and various modern tools
	<i>Excellent, Very good, Good, Fair, Poor</i>
14	How far the student is able to meet economic, environmental, ethical, and sustainability constraints while designing civil engineering system or elements
	<i>Excellent, Very good, Good, Fair, Poor</i>
15	How far the student is able to manifest professional and ethical responsibilities while discharging duties
	<i>Excellent, Very good, Good, Fair, Poor</i>

**M.Tech-Struct Engg & Construction Management**

Sl.No.	The extent to which engineering education has enhanced your ability to:
1	Apply the knowledge of mathematics, physics, chemistry and basic engineering to solve Engineering problems
	<i>Very Strong, Strong, Average, weak , Very Weak</i>
2	Identify, formulate and analyze complex Engineering problems and derive meaningful conclusions using principles of mathematics, science and engineering
	<i>Very Strong, Strong, Average, weak , Very Weak</i>

3	Design efficient processes and develop high quality products giving due consideration to safety, environmental issues and economic aspects
	<i>Very Strong, Strong, Average, weak , Very Weak</i>
4	Conduct investigation of complex Engineering problems using research based methods, analyze and interpret data to draw valid conclusions
	<i>Very Strong, Strong, Average, weak , Very Weak</i>
5	Acquire skills to select and use modern engineering tools and software for modeling, simulation and solution of complex Engineering problems
	<i>Very Strong, Strong, Average, weak , Very Weak</i>
6	Apply contextual knowledge to assess societal, health, safety, legal and cultural issues in professional practice to become a responsible engineer
	<i>Very Strong, Strong, Average, weak , Very Weak</i>
7	Understand the societal and environmental impacts of applying Engineering to solve real life problems and practice sustainable development
	<i>Very Strong, Strong, Average, weak , Very Weak</i>
8	Work with full commitment to professional and ethical responsibilities as an engineer
	<i>Very Strong, Strong, Average, weak , Very Weak</i>
9	Work individually in a team or as a leader in any demanding or challenging environment
	<i>Very Strong, Strong, Average, weak , Very Weak</i>
10	Communicate effectively with engineering community or the society at large through appropriate reports, designs, presentations and instructions
	<i>Very Strong, Strong, Average, weak , Very Weak</i>
11	Engage in life-long learning in the broadest context of developments in technology for continuous professional development
	<i>Very Strong, Strong, Average, weak , Very Weak</i>
12	Understand engineering and management principles and apply these to manage multidisciplinary projects and finance as an individual or as a member or leader of a team



	<i>Very Strong, Strong, Average, weak , Very Weak</i>
13	How well the student modify and upgrade the present computing techniques to meet the increasing challenges in structural engineering and construction management
	<i>Excellent, Very good, Good, Fair, Poor</i>
14	How well the students to have the commitment in the socio-economic progress of the society.
	<i>Excellent, Very good, Good, Fair, Poor</i>

#### M.Tech-Computer Aided Structural Engineering

Sl.No.	The extent to which engineering education has enhanced your ability to:
1	Apply the knowledge of mathematics, physics, chemistry and basic engineering to solve Engineering problems
	<i>Very Strong, Strong, Average, weak , Very Weak</i>
2	Identify, formulate and analyze complex Engineering problems and derive meaningful conclusions using principles of mathematics, science and engineering
	<i>Very Strong, Strong, Average, weak , Very Weak</i>
3	Design efficient processes and develop high quality products giving due consideration to safety, environmental issues and economic aspects
	<i>Very Strong, Strong, Average, weak , Very Weak</i>
4	Conduct investigation of complex Engineering problems using research based methods, analyze and interpret data to draw valid conclusions
	<i>Very Strong, Strong, Average, weak , Very Weak</i>
5	Acquire skills to select and use modern engineering tools and software for modeling, simulation and solution of complex Engineering problems
	<i>Very Strong, Strong, Average, weak , Very Weak</i>
6	Apply contextual knowledge to assess societal, health, safety, legal and cultural issues in professional practice to become a responsible engineer
	<i>Very Strong, Strong, Average, weak , Very Weak</i>

7	Understand the societal and environmental impacts of applying Engineering to solve real life problems and practice sustainable development
	<i>Very Strong, Strong, Average, weak , Very Weak</i>
8	Work with full commitment to professional and ethical responsibilities as an engineer
	<i>Very Strong, Strong, Average, weak , Very Weak</i>
9	Work individually in a team or as a leader in any demanding or challenging environment
	<i>Very Strong, Strong, Average, weak , Very Weak</i>
10	Communicate effectively with engineering community or the society at large through appropriate reports, designs, presentations and instructions
	<i>Very Strong, Strong, Average, weak , Very Weak</i>
11	Engage in life-long learning in the broadest context of developments in technology for continuous professional development
	<i>Very Strong, Strong, Average, weak , Very Weak</i>
12	Understand engineering and management principles and apply these to manage multidisciplinary projects and finance as an individual or as a member or leader of a team
	<i>Very Strong, Strong, Average, weak , Very Weak</i>
13	How well the student is able to modify and upgrade the present computing techniques to meet the increasing challenges in structural engineering.
	<i>Excellent, Very good, Good, Fair, Poor</i>
14	How well student to have the commitment to the socio-economic progress of the society.
	<i>Excellent, Very good, Good, Fair, Poor</i>

#### PhD-PhD in Civil Engineering

Sl.No.	The extent to which engineering education has enhanced your ability to:
1	Apply the knowledge of mathematics, physics, chemistry and basic engineering to solve Engineering problems

	<i>Very Strong, Strong, Average, weak , Very Weak</i>
2	Identify, formulate and analyze complex Engineering problems and derive meaningful conclusions using principles of mathematics, science and engineering
	<i>Very Strong, Strong, Average, weak , Very Weak</i>
3	Design efficient processes and develop high quality products giving due consideration to safety, environmental issues and economic aspects
	<i>Very Strong, Strong, Average, weak , Very Weak</i>
4	Conduct investigation of complex Engineering problems using research based methods, analyze and interpret data to draw valid conclusions
	<i>Very Strong, Strong, Average, weak , Very Weak</i>
5	Acquire skills to select and use modern engineering tools and software for modeling, simulation and solution of complex Engineering problems
	<i>Very Strong, Strong, Average, weak , Very Weak</i>
6	Apply contextual knowledge to assess societal, health, safety, legal and cultural issues in professional practice to become a responsible engineer
	<i>Very Strong, Strong, Average, weak , Very Weak</i>
7	Understand the societal and environmental impacts of applying Engineering to solve real life problems and practice sustainable development
	<i>Very Strong, Strong, Average, weak , Very Weak</i>
8	Work with full commitment to professional and ethical responsibilities as an engineer
	<i>Very Strong, Strong, Average, weak , Very Weak</i>
9	Work individually in a team or as a leader in any demanding or challenging environment
	<i>Very Strong, Strong, Average, weak , Very Weak</i>
10	Communicate effectively with engineering community or the society at large through appropriate reports, designs, presentations and instructions
	<i>Very Strong, Strong, Average, weak , Very Weak</i>

11	Engage in life-long learning in the broadest context of developments in technology for continuous professional development
	<i>Very Strong, Strong, Average, weak , Very Weak</i>
12	Understand engineering and management principles and apply these to manage multidisciplinary projects and finance as an individual or as a member or leader of a team
	<i>Very Strong, Strong, Average, weak , Very Weak</i>

## ALUMNI SURVEY

**Objective:** Collect alumni views to help us improve our programs and assess the effectiveness of Outcome based education framework adopted here.

Sl.No.	Question
1	Name
2	Organization
3	Qualification secured from Amal Jyothi College of Engineering (AJCE)
4	Year of Graduation from AJCE
5	E-mail ID
6	Mobile No
7	Present Status
	<i>[Employed/ Entrepreneur/ Pursuing higher studies/ Working at home/ Other]</i>
8	Present Employment level
	<i>[High managerial/ Middle Managerial /Low Managerial/ Non-managerial/Other]</i>
9	Number of Years of experience at the present level
	<i>[above 10/ between 5 and 10/ between 2 and 5/ between 1 and 2/ less than 1]</i>
10	Is your present job in the core area of Engineering you have studied?
	<i>[very much/ strongly related / weakly related/ not at all related/ no relation to engineering at all]</i>
	How well have you been able to apply your knowledge of Mathematics, Science and Engineering fundamentals for the solution of engineering problems in your work?

11	
	<i>[very well/ somewhat well / rarely well/ not at all/ not applicable]</i>
12	How well have you been able to identify, formulate and analyze complex Engineering problems and derive meaningful conclusions using principles of mathematics, science and engineering in your work?
	<i>[very well/ somewhat well / rarely well/ not at all/ not applicable]</i>
13	How well have you been able to design efficient processes and develop high quality products giving due consideration to safety, environmental issues and economic aspects?
	<i>[very well/ somewhat well / rarely well/ not at all/ not applicable]</i>
14	How well have you been able to conduct investigation of complex Engineering problems using research based methods, analyze and interpret data to draw valid conclusions?
	<i>[very well/ somewhat well / rarely well/ not at all/ not applicable]</i>
15	How well have you been able to select and use modern engineering tools and software for modeling, simulation and solution of complex Engineering problems?
	<i>[very well/ somewhat well / rarely well/ not at all/ not applicable]</i>
16	How well have you been able to apply contextual knowledge to assess societal, health, safety, legal and cultural issues in your professional practice as a responsible engineer?
	<i>[very well/ somewhat well / rarely well/ not at all/ not applicable]</i>
17	How well have you been able to understand the societal and environmental impacts of applying Engineering to solve real life problems and practice sustainable development?
	<i>[very well/ somewhat well / rarely well/ not at all/ not applicable]</i>
18	How well have you been able to work with full commitment to your professional and ethical responsibilities as an engineer?
	<i>[very well/ somewhat well / rarely well/ not at all/ not applicable]</i>
19	How well have you been able to work successfully as an individual, in a team or as a team leader in any demanding or challenging environment?
	<i>[very well/ somewhat well / rarely well/ not at all/ not applicable]</i>
20	How well have you been able to communicate effectively through written and oral modes to all levels of stakeholders in society?

	<i>[very well/ somewhat well / rarely well/ not at all/ not applicable]</i>
21	How well have you been engaging yourself in life-long learning in the broadest context of developments in technology for continuous professional development?  <i>[very well/ somewhat well / rarely well/ not at all/ not applicable]</i>
22	How well have you been able to apply engineering and management principles to manage multidisciplinary projects as an individual or as a team member or team leader?  <i>[very well/ somewhat well / rarely well/ not at all/ not applicable]</i>
23	To what extent do you think you are able to apply your technical knowledge and take on higher responsibilities in industry, academics and diverse fields of your engineering specialization?  <i>[very well/ somewhat well / rarely well/ not at all/ not applicable]</i>
24	How far you are in a position to pursue continual path of professional development, interspersed with advanced education and continuing enhancement programs, relevant to your specific career goals?  <i>[very well/ somewhat well / rarely well/ not at all/ not applicable]</i>
25	How far you are able to channelize your knowledge base, business links and social contacts into socially beneficial activities?  <i>[very well/ somewhat well / rarely well/ not at all/ not applicable]</i>
26	How far you able to provide effective and efficient real time solutions to Engineering problems in your area, based on acquired knowledge so as to empower industry and society?  <i>[very well/ somewhat well / rarely well/ not at all/ not applicable]</i>
27	How far you are able to enhance research skills to develop sustainable solutions to Complex Engineering problems in your area of work?  <i>[very well/ somewhat well / rarely well/ not at all/ not applicable]</i>
28	How far you have acquired managerial skills and ethical values to develop yourself as a true leader and team player?  <i>[very well/ somewhat well / rarely well/ not at all/ not applicable]</i>
29	Other suggestions, if any:

## EMPLOYER SURVEY

**Objective:** Collect the views of Employers of our Graduates to help us improve our programs and assess the

effectiveness of Outcome based education framework practiced here.

Sl.No.	Question
1	Name of the Company/Organization
2	Name of the person responding to this Survey
3	Address
4	E-mail ID
5	Mobile No
6	Present Status (Title/Designation)
7	No. of years of Experience in the Company/Organization
8	Please, indicate the Professional Background of the person responding to this survey
9	Please indicate the number of Alumni employed by your Company/ Organization, who have graduated from Amal Jyothi College of Engineering (AJCE), who are considered for this Survey
10	How do you rate the level of engineering knowledge of our Graduate(s)?
	<i>[Excellent/ Good / Fair/ Needs improvement/ Not up to the mark]</i>
11	How do you evaluate the technical competence/skills of our Graduate (s)?
	<i>[Excellent/ Good / Fair/ Needs improvement/ Not up to the mark]</i>
12	How do you feel the Graduate(s) of AJCE were trained properly for carrying out the work in your company/ organization?
	<i>[Excellent/ Good / Fair/ Needs improvement/ Not up to the mark]</i>
13	How effectively can he/she use modern engineering tools to solve problems connected with his/her assigned work?
	<i>[Excellent/ Good / Fair/ Needs improvement/ Not up to the mark]</i>
14	Can the Graduate(s) work effectively as an individual or in a team to accomplish a common goal for the company/organization?
	<i>[Excellent/ Good / Fair/ Needs improvement/ Not up to the mark]</i>
15	How far the Graduate(s) is/are able to lead a team of technical personnel to accomplish a given task for the company/organization?

	<i>[Excellent/ Good / Fair/ Needs improvement/ Not up to the mark]</i>
16	How well the Graduate(s) can work in a collaborative multidisciplinary professional work group in your organization?
	<i>[Excellent/ Good / Fair/ Needs improvement/ Not up to the mark]</i>
17	How active Is/are the Graduate(s) as a member(s) of any professional society or organization?
	<i>[Excellent/ Good / Fair/ Needs improvement/ Not up to the mark]</i>
18	How far the Graduate is interested to enhance his/her professional skills by attending short courses/ workshops, training programs or conferences/ meetings?
	<i>[Excellent/ Good / Fair/ Needs improvement/ Not up to the mark]</i>
19	How far the Graduate is interested in enhancing his qualifications by enrolling for higher Degrees, like M Tech., MBA, Ph D etc.?
	<i>[Excellent/ Good / Fair/ Needs improvement/ Not up to the mark]</i>
20	How satisfied are you with the communication skills of our Graduate(s)?
	<i>[Excellent/ Good / Fair/ Needs improvement/ Not up to the mark]</i>
21	How far our Graduate(s) have the technical skills to design, develop, implement and modify integrated projects in the field of his/her engineering specialization?
	<i>[Excellent/ Good / Fair/ Needs improvement/ Not up to the mark]</i>
22	How do you rate the level of his/her integrity/adherence to ethical principles in his work?
	<i>[Excellent/ Good / Fair/ Needs improvement/ Not up to the mark]</i>
23	How do you rate his/her efficiency to manage finance related matters in your company/organization?
	<i>[Excellent/ Good / Fair/ Needs improvement/ Not up to the mark]</i>
24	How do you rate his/her concerns and awareness for environmental issues and sustainable development?
	<i>[Excellent/ Good / Fair/ Needs improvement/ Not up to the mark]</i>
25	Overall, how well satisfied are you with the performance of the AJCE Graduate(s)?
	<i>[Excellent/ Good / Fair/ Needs improvement/ Not up to the mark]</i>



25	Suggestions, if any, for molding our Graduates as still better engineers
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## COURSE OUTCOMES

### B.Tech-Civil Engineering

#### SEMESTER-1

#### MA101

Course Code	Course Name	L-T-P:C	Year of Introduction
MA101	CALCULUS	3-1-0:4	2016

No.	Course Outcome - MA101 - CALCULUS	Target
CO1	Apply the concept of convergence of infinite series to solve Engineering problems	60%
CO2	Apply the concept of maxima and minima of functions of two variables to solve Engineering problems	60%
CO3	Apply calculus of vector-valued functions to dynamical quantities like velocity and acceleration	60%
CO4	Identify and use Multiple Integrals to evaluate surface area and volume	60%
CO5	Apply the concepts of Divergence and Curl to solve Engineering problems	60%
CO6	Demonstrate the application of vector calculus theorems to evaluate different integrals	60%

#### COURSE END SURVEY - MA101 - CALCULUS

Sl.No	Questions & Options
CO1	To what extent you are able to apply the concept of convergence of infinite series to solve Engineering problems
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO2	To what extent you are able to apply the concept of maxima and minima of functions of two variables to solve Engineering problems
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO3	To what extent you are able to apply calculus of vector-valued functions to dynamical quantities like velocity and acceleration
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO4	To what extent you are able to identify and use Multiple Integrals to evaluate surface area and volume
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO5	To what extent you are able to extent apply the concepts of Divergence and Curl to solve Engineering problems
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>

CO6	To what extent you are able to demonstrate the application of vector calculus theorems to evaluate different integrals
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>

**CO->PO MAPPING - MA101 - CALCULUS**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	3					1	2	2	2
CO2	3	3	3	3					1	2	2	2
CO3	3	3	3	3					1	2	2	2
CO4	3	3	3	3					1	2	2	2
CO5	3	3	3	3					1	2	2	2
CO6	3	3	3	3					1	2	2	2

**CO->PSO MAPPING - MA101 - CALCULUS**

CO/PSO	PSO1	PSO2	PSO3
CO1	3	2	
CO2	3	2	
CO3	3	2	
CO4	3	2	
CO5	3	2	
CO6	3	2	

**COURSE->PO MAPPING - MA101 - CALCULUS**

MA101/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	3	3	3					1	2	2	2

**COURSE->PSO MAPPING - MA101 - CALCULUS**

MA101/PSO	PSO1	PSO2	PSO3
	3	2	

**CY100**

Course Code	Course Name	L-T-P:C	Year of Introduction
CY100	Engineering Chemistry	3-1-0:4	2016

No.	Course Outcome - CY100 - Engineering Chemistry	Target
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CO1	Demonstrate the principles of spectroscopy and apply them to explain chemical phenomena	0%
CO2	Illustrate principles and applications of various electrochemical techniques and cells.	60%
CO3	Discuss instrumental methods like chromatography, conductivity and thermal analysis for chemical analysis.	60%
CO4	Recognize the properties and applications of engineering materials, such as polymers and nanomaterials	60%
CO5	Evaluate the properties of complex chemicals such as fuels and lubricants.	60%
CO6	Describe the properties of water and identify methods for water purification	60%

**COURSE END SURVEY - CY100 - Engineering Chemistry**

Sl.No	Questions & Options
CO1	To what extent you are able to demonstrate the principles of spectroscopy and apply them to explain chemical phenomena
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO2	To what extent you are able to illustrate principles and applications of various electrochemical techniques and cells.
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO3	To what extent you are able to discuss instrumental methods like chromatography, conductivity and thermal analysis for chemical analysis.
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO4	To what extent you are able to recognize the properties and applications of engineering materials, such as polymers and nanomaterials
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO5	To what extent you are able to evaluate the properties of complex chemicals such as fuels and lubricants.
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO6	To what extent you are able to describe the properties of water and identify methods for water purification
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>

**CO->PO MAPPING - CY100 - Engineering Chemistry**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2	3	3	3					3
CO2	3	3	2		3							
CO3	3	3	2		3			2				
CO4	3	2	2	2	3							
CO5	3		2		3	3	3	3				

CO6	3		2			3	2					2
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**CO->PSO MAPPING - CY100 - Engineering Chemistry**

CO/PSO	PSO1	PSO2	PSO3
CO1			
CO2			
CO3			
CO4			
CO5			
CO6			

**COURSE->PO MAPPING - CY100 - Engineering Chemistry**

CY100/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	3	2	2	3	3	3	3				3

**COURSE->PSO MAPPING - CY100 - Engineering Chemistry**

CY100/PSO	PSO1	PSO2	PSO3

**BE110**

Course Code	Course Name	L-T-P:C	Year of Introduction
BE110	Engineering Graphics	1-1-2:3	2016

No.	Course Outcome - BE110 - Engineering Graphics	Target
CO1	Demonstrate Engineering Drawing Standards (as per BIS), dimensioning and preparation of drawings leading to illustration of Graphics as the communication language of Engineers	60%
CO2	Interpret engineering drawings, leading to enhanced presentation skills of 3-D objects in 2-D plane / paper and improved visualization of physical objects.	60%
CO3	Apply the principles of orthographic projections of lines, solids and sectioned views in the design of pipeline systems.	60%
CO4	Prepare isometric and perspective projections that help to reconstruct solutions to real-time engineering problems in 3D to provide better understanding	60%
CO5	Create surface development and generate projections of penetrated objects which will help to develop suitable models for industrial applications.	60%
CO6	Recognize the importance of CAD software, and develop AutoCAD skills to transfer technical data and sketches into electronic drawing.	60%

**COURSE END SURVEY - BE110 - Engineering Graphics**

Sl.No	Questions & Options
CO1	To what extent you are able to demonstrate Engineering Drawing Standards (as per BIS), dimensioning and preparation of drawings leading to illustration of Graphics as the communication language of Engineers?
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO2	To what extent you are able to interpret engineering drawings, leading to enhanced presentation skills of 3-D objects in 2-D plane / paper and improved visualization of physical objects?
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO3	To what extent you are able to apply the principles of orthographic projections of lines, solids and sectioned views in the design of pipeline systems?
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO4	To what extent you are able to prepare isometric and perspective projections that help to reconstruct solutions to real-time engineering problems in 3D to provide better understanding?
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO5	To what extent you are able to create surface development and generate projections of penetrated objects which will help to develop suitable models for industrial applications?
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO6	To what extent you are able to recognize the importance of CAD software, and develop AutoCAD skills to transfer technical data and sketches into electronic drawing?
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>

**CO->PO MAPPING - BE110 - Engineering Graphics**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	3								1	3
CO2	2	2	2							2	1	2
CO3	2	2						2		2		2
CO4	2	2	3					2		3	1	2
CO5	2	2	2							2		
CO6	3	2	2	2	3					2	2	2

**CO->PSO MAPPING - BE110 - Engineering Graphics**

CO/PSO	PSO1	PSO2	PSO3
CO1	3	2	3
CO2	2	2	2
CO3	2	1	1
CO4	3	1	2

CO5	1		2
CO6	3	3	3

**COURSE->PO MAPPING - BE110 - Engineering Graphics**

BE110/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	2	3	2	3			2		3	2	3

**COURSE->PSO MAPPING - BE110 - Engineering Graphics**

BE110/PSO	PSO1	PSO2	PSO3
	3	3	3

**BE10101**

Course Code	Course Name	L-T-P:C	Year of Introduction
BE10101	INTRODUCTION TO CIVIL ENGINEERING	2-1-0:3	2016

No.	Course Outcome - BE10101 - INTRODUCTION TO CIVIL ENGINEERING	Target
CO1	Impart the knowledge on importance of Civil Engineering in the infrastructural development of society	60%
CO2	Identify the types, uses and properties of various building materials.	60%
CO3	Identify the type of construction for different components of a building	60%
CO4	Establish an idea about the different types of masonry work	60%
CO5	Analyze various types of roofs and floors.	60%

**COURSE END SURVEY - BE10101 - INTRODUCTION TO CIVIL ENGINEERING**

Sl.No	Questions & Options
CO1	To what extent you are able to Impart the knowledge on importance of Civil Engineering in the infrastructural development of society
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO2	To what extent you are able to Identify the types, uses and properties of various building materials.
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO3	To what extent you are able to Identify the type of construction for different components of a building
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO4	To what extent you are able to Establish an idea about the different types of masonry work
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>

CO5	To what extent you are able to Analyze various types of roofs and floors.
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>

**CO->PO MAPPING - BE10101 - INTRODUCTION TO CIVIL ENGINEERING**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1							1					
CO2	2		2		1	1	2	1				2
CO3	2	2	1	1	2	2	1	1		2		2
CO4	2	2	1	1			1					
CO5	2	2	1	1	2	2	1	1		2		2

**CO->PSO MAPPING - BE10101 - INTRODUCTION TO CIVIL ENGINEERING**

CO/PSO	PSO1	PSO2	PSO3
CO1			2
CO2	2	1	3
CO3	2	2	2
CO4	2		2
CO5	2	2	2

**COURSE->PO MAPPING - BE10101 - INTRODUCTION TO CIVIL ENGINEERING**

BE10101/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	2	2	2	1	2	2	2	1		2		2

**COURSE->PSO MAPPING - BE10101 - INTRODUCTION TO CIVIL ENGINEERING**

BE10101/PSO	PSO1	PSO2	PSO3
	2	2	3

**BE103**

Course Code	Course Name	L-T-P:C	Year of Introduction
BE103	Introduction to Sustainable Engineering	2-0-1:3	2016

No.	Course Outcome - BE103 - Introduction to Sustainable Engineering	Target
CO1	Explain the role of engineering in sustainable development and environmental protection	60%
CO2	Describe global environmental issues and the consequent threats to sustainable development	61%
CO3	Apply simple, efficient and indigenous solutions to assess and overcome threats to sustainability	60%

CO4	Identify and apply engineering methods and eco-friendly solutions to maintain a green environment	60%
CO5	Demonstrate the relevance of non-conventional energy sources for sustainable development of the society	61%
CO6	Recognize the role of technology in the sustainable development of society and industry	61%

**COURSE END SURVEY - BE103 - Introduction to Sustainable Engineering**

Sl.No	Questions & Options
CO1	To what extent are you able to explain the role of engineering in sustainable development and environmental protection
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO2	To what extent are you able to describe global environmental issues and the consequent threats to sustainable development
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO3	To what extent are you able to apply simple, efficient and indigenous solutions to assess and overcome threats to sustainability
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO4	To what extent are you able to Identify and apply engineering methods and eco-friendly solutions to maintain a green environment
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO5	To what extent are you able to demonstrate the relevance of non-conventional energy sources for sustainable development of the society
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO6	To what extent are you able to recognize the role of technology in the sustainable development of society and industry
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>

**CO->PO MAPPING - BE103 - Introduction to Sustainable Engineering**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2					3	3	3		2		2
CO2	2	3	3			3	3	3	2	2		3
CO3	3	3	3	3	2	3	3	2				2
CO4	3	3	3		2	3	3	3	2		3	2
CO5	2				3	3	3					
CO6	3				2	3	3	3				

**CO->PSO MAPPING - BE103 - Introduction to Sustainable Engineering**

CO/PSO	PSO1	PSO2	PSO3
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CO1		2	2
CO2		2	2
CO3	2	2	2
CO4	3	2	2
CO5		2	2
CO6	1	1	1

**COURSE->PO MAPPING - BE103 - Introduction to Sustainable Engineering**

BE103/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	3	3	3	3	3	3	3	2	2	3	3

**COURSE->PSO MAPPING - BE103 - Introduction to Sustainable Engineering**

BE103/PSO	PSO1	PSO2	PSO3
	3	2	2

**CE110**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE110	Civil Engineering Workshop	0-0-2:1	2016

No.	Course Outcome - CE110 - Civil Engineering Workshop	Target
CO1	Apply the basic measuring techniques, like linear, area, volume calculations, to various civil engineering applications.	60%
CO2	Set out buildings using modern methods	60%
CO3	Identify masonry for the construction of a building.	60%
CO4	Analyze the strength and properties of various building materials.	60%
CO5	Coordinate the work related plumbing, and sanitary fittings.	60%
CO6	Compute the level difference between points.	60%

**COURSE END SURVEY - CE110 - Civil Engineering Workshop**

Sl.No	Questions & Options
CO1	To what extent you are able to apply the basic measuring techniques, like linear, area, volume calculations, to various civil engineering applications. Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO2	To what extent you are able to set out buildings using modern methods

	Answer Choice- <i>Very advanced/Advanced/Proficient/Basic/ Minimal</i>
CO3	To what extent you are able to identify masonry for the construction of a building.
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO4	To what extent you are able to analyze the strength and properties of various building materials.
	Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>
CO5	To what extent you are able to coordinate the work related to plumbing, and sanitary fittings.
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO6	To what extent you are able to compute the level difference between points.
	Answer Choice- <i>Very advanced/Advanced/Proficient/Basic/ Minimal</i>

**CO->PO MAPPING - CE110 - Civil Engineering Workshop**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	1		2		1		2	2		2
CO2	3	1			3	2			2	2		2
CO3	3	1			1	2	1			2	1	
CO4	1	2	1	1	1		2			2	1	2
CO5	2	1	3	2	3	2	2	2	2	2	1	2
CO6	3	1	1		3				2	2		2

**CO->PSO MAPPING - CE110 - Civil Engineering Workshop**

CO/PSO	PSO1	PSO2	PSO3
CO1	3	2	2
CO2	2	2	2
CO3	2	1	3
CO4	2	1	1
CO5	3	3	3
CO6	3	3	1

**COURSE->PO MAPPING - CE110 - Civil Engineering Workshop**

CE110/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	2	3	2	3	2	2	2	2	2	1	2

**COURSE->PSO MAPPING - CE110 - Civil Engineering Workshop**

	PSO1	PSO2	PSO3

CE110/PSO	3	3	3
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**CY110**

Course Code	Course Name	L-T-P:C	Year of Introduction
CY110	Engineering Chemistry Lab	0-0-2:1	2016

No.	Course Outcome - CY110 - Engineering Chemistry Lab	Target
CO1	Analyse and measure the quality of water and environmental pollution.	65%
CO2	Analyse and identify unknown compounds from spectral measurements.	65%
CO3	Prepare different polymers for industrial applications.	65%
CO4	Find the strength and pH of unknown solutions using different instrumental methods.	65%
CO5	Measure the percentage of metal present in metal ore.	65%
CO6	Apply and demonstrate theoretical concepts of Engineering Chemistry.	65%

**COURSE END SURVEY - CY110 - Engineering Chemistry Lab**

Sl.No	Questions & Options
CO1	To what extent you are able to do analyse and measure the quality of water and environmental pollution.
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO2	To what extent you are able to do analyse and identify unknown compounds from spectral measurements.
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO3	To what extent you are able to prepare different polymers for industrial applications.
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO4	To what extent you are able to find the strength and pH of unknown solutions using different instrumental methods.
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO5	To what extent you are able to measure the percentage of metal present in metal ore.
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO6	To what extent you are able to apply and demonstrate theoretical concepts of Engineering Chemistry.
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>

**CO->PO MAPPING - CY110 - Engineering Chemistry Lab**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	1	3	3	3		3		2	2

CO2	3	2	2	1	3		3	2	3		2	
CO3	3	2	2	1	2	2	3	2	3		2	3
CO4	3	2	3	1	3	3	3		3		2	
CO5	3	2	3	1	3	3	3		3		2	
CO6	3	2	2	1	3	3	3	2	3	2	2	2

**CO->PSO MAPPING - CY110 - Engineering Chemistry Lab**

CO/PSO	PSO1			PSO2			PSO3		
CO1									
CO2									
CO3									
CO4									
CO5									
CO6									

**COURSE->PO MAPPING - CY110 - Engineering Chemistry Lab**

CY110/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	2	3	1	3	3	3	2	3	2	2	3

**COURSE->PSO MAPPING - CY110 - Engineering Chemistry Lab**

CY110/PSO	PSO1			PSO2			PSO3		

**EC110**

Course Code	Course Name	L-T-P:C	Year of Introduction
EC110	Electronics Engineering Workshop	0-0-2:1	2016

No.	Course Outcome - EC110 - Electronics Engineering Workshop	Target
CO1	Demonstrate the working of various electronic components and instruments	60%
CO2	Wire electronic circuits on bread board as per the circuit diagram and to design a dc power supply	65%
CO3	Design and implement basic transistor circuits	65%
CO4	Familiarize soldering and printed circuit board design for electronic circuits.	65%
CO5	Illustrate EDA tools for drawing and simulation of electronic circuits	65%

**COURSE END SURVEY - EC110 - Electronics Engineering Workshop**

Sl.No	Questions & Options
CO1	Are you able to identify the various electronic components?
	Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>
CO2	Are you able to wire the circuits as per the circuit diagram?
	Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>
CO3	Are you able to design amplifiers?
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO4	Can you perform soldering in a common board?
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO5	Are you good in using EDA tools for simulating circuits?
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>

**CO->PO MAPPING - EC110 - Electronics Engineering Workshop**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	1	2	3	2	2	2	3		2	
CO2	2	2	2	2	2	2	1	3	2		2	
CO3	2	2	2	2	2	2		2	2	3	2	
CO4	2	2	2	2	2	2	1	2	2	2	2	2
CO5	2	2	2	2	3	3	2	2	2	2	2	2

**CO->PSO MAPPING - EC110 - Electronics Engineering Workshop**

CO/PSO	PSO1	PSO2	PSO3
CO1	2	2	2
CO2	3	2	2
CO3	2	3	2
CO4	2	2	3
CO5	1	2	1

**COURSE->PO MAPPING - EC110 - Electronics Engineering Workshop**

EC110/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	2	2	2	3	3	2	3	3	3	2	2

**COURSE->PSO MAPPING - EC110 - Electronics Engineering Workshop**

	PSO1	PSO2	PSO3

EC110/PSO	3	3	3
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**PH100**

Course Code	Course Name	L-T-P:C	Year of Introduction
PH100	Engineering Physics	3-1-0:4	2016

No.	Course Outcome - PH100 - Engineering Physics	Target
CO1	Analyse different phenomena associated with the generation and propagation of oscillations and waves	65%
CO2	Demonstrate wave-like phenomena associated with light and use them to measure its properties	60%
CO3	Illustrate the phenomenon of superconductivity and evaluate the properties of the superconducting state	65%
CO4	Identify the features of quantum and statistical phenomena and demonstrate the dynamics of microscopic entities.	65%
CO5	Describe the production and properties of acoustic and ultrasonic waves and demonstrate their applications.	65%
CO6	Outline the construction and properties of different lasers and optoelectronic devices, and identify their applications	65%

**COURSE END SURVEY - PH100 - Engineering Physics**

Sl.No	Questions & Options
CO1	To what extent you are able to Analyse different phenomena associated with the generation and propagation of oscillations and waves?
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO2	To what extent you are able to Demonstrate wave-like phenomena associated with light and use them to measure its properties
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO3	To what extent you are able to Illustrate the phenomenon of superconductivity and evaluate the properties of the superconducting state
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO4	To what extent you are able to Identify the features of quantum and statistical phenomena and demonstrate the dynamics of microscopic entities.
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO5	To what extent you are able to Describe the production and properties of acoustic and ultrasonic waves and
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>

CO6	To what extent you are able to Outline the construction and properties of different lasers and optoelectronic devices, and identify their applications
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>

**CO->PO MAPPING - PH100 - Engineering Physics**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2		2						1	2
CO2	3	2	2		2							2
CO3	3	2	2		2						2	2
CO4	3	2	2		1							1
CO5	3	2	2		2		1			2	2	2
CO6	3	2	1		1		1		1	2		2

**CO->PSO MAPPING - PH100 - Engineering Physics**

CO/PSO	PSO1	PSO2	PSO3
CO1	3	1	1
CO2	3	1	
CO3	3	2	2
CO4	3	1	
CO5	3	2	2
CO6	2	2	1

**COURSE->PO MAPPING - PH100 - Engineering Physics**

PH100/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	2	2		2		1		1	2	2	2

**COURSE->PSO MAPPING - PH100 - Engineering Physics**

PH100/PSO	PSO1	PSO2	PSO3
	3	2	2

**EC100**

Course Code	Course Name	L-T-P:C	Year of Introduction
EC100	Basics of Electronics Engineering	2-1-0:3	2016

No.	Course Outcome - EC100 - Basics of Electronics Engineering	Target
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CO1	Identify and select necessary components used in various electronic circuits.	60%
CO2	Design and organize simple circuits using different types of diodes and transistors	60%
CO3	Demonstrate the working of analog circuits such as rectifiers, amplifiers and oscillators	60%
CO4	Illustrate the working of basic building blocks of analog and digital systems such as Operational amplifiers and Logic gates.	60%
CO5	Demonstrate the use of basic measuring instruments used in electronics work.	70%
CO6	Compare and contrast various modulation techniques, communication systems and TV signal transmission techniques	70%

**COURSE END SURVEY - EC100 - Basics of Electronics Engineering**

Sl.No	Questions & Options
CO1	To what extent you are able to Identify and select necessary components used in various electronic circuits?
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO2	To what extent you are able to Design and organize simple circuits using different types of diodes and transistors
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO3	To what extent you are able to Demonstrate the working of analog circuits such as rectifiers, amplifiers and oscillators ?
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO4	To what extent you are able to Illustrate the working of basic building blocks of analog and digital systems such as Operational amplifiers and Logic gates?
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO5	To what extent you are able to Demonstrate the use of basic measuring instruments used in electronics work?
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO6	To what extent you are able to Compare and contrast various modulation techniques, communication systems and TV signal transmission techniques ?
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>

**CO->PO MAPPING - EC100 - Basics of Electronics Engineering**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2		1	2						
CO2	3	2	2		1	2						
CO3	3	2	2		1	2						
CO4	3	2	2		1	2						
CO5	3	2	2		1	2						



CO6	3	2	2		1	2						
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**CO->PSO MAPPING - EC100 - Basics of Electronics Engineering**

CO/PSO	PSO1	PSO2	PSO3
CO1	2		
CO2	2		
CO3	2		
CO4	2		
CO5	2		
CO6	2		

**COURSE->PO MAPPING - EC100 - Basics of Electronics Engineering**

EC100/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	2	2		1	2						

**COURSE->PSO MAPPING - EC100 - Basics of Electronics Engineering**

EC100/PSO	PSO1	PSO2	PSO3
	2		

**PH110**

Course Code	Course Name	L-T-P:C	Year of Introduction
PH110	Engineering Physics Lab	0-0-2:1	2016

No.	Course Outcome - PH110 - Engineering Physics Lab	Target
CO1	Measure basic physical quantities, such as voltage, frequency, temperature etc and evaluate measurement accuracy.	70%
CO2	Measure and analyse the properties of electrical and acoustic waves and oscillations, and demonstrate resonance.	70%
CO3	Demonstrate wave-like properties of light and measure the wavelength of monochromatic light sources	70%
CO4	Illustrate the propagation of light through an optical fibre and measure its numerical aperture	70%
CO5	Demonstrate the working of devices such as solar cells and photoelectric cells	70%
CO6	Organize an experimental set up and measure fundamental constants such as the Planck's constant.	70%

**COURSE END SURVEY - PH110 - Engineering Physics Lab**

Sl.No	Questions & Options
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CO1	To what extent you are able to Measure basic physical quantities, such as voltage, frequency, temperature etc and evaluate measurement accuracy.
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO2	To what extent you are able to Measure and analyse the properties of electrical and acoustic waves and oscillations, and demonstrate resonance.
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO3	To what extent you are able to Demonstrate wave-like properties of light and measure the wavelength of monochromatic light sources
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO4	To what extent you are able to Illustrate the propagation of light through an optical fibre and measure its numerical aperture
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO5	To what extent you are able to Demonstrate the working of devices such as solar cells and photoelectric cells
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO6	To what extent you are able to Organize an experimental set up and measure fundamental constants such as the Planck's constant.
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>

**CO->PO MAPPING - PH110 - Engineering Physics Lab**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2		2	2				2	2		
CO2	3	3		2	2				2	2		
CO3	3	3		2	2				2	2		
CO4	3	3		2	2				2	2		
CO5	3	2		2	2				2	2	3	
CO6	2	3	1	2	3				2	2		

**CO->PSO MAPPING - PH110 - Engineering Physics Lab**

CO/PSO	PSO1	PSO2	PSO3
CO1	3	2	2
CO2	2	2	2
CO3	1	1	
CO4	1	1	
CO5	3	2	1

CO6	1		
-----	---	--	--

**COURSE->PO MAPPING - PH110 - Engineering Physics Lab**

PH110/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	3	1	2	3				2	2	3	

**COURSE->PSO MAPPING - PH110 - Engineering Physics Lab**

PH110/PSO	PSO1	PSO2	PSO3
	3	2	2

**U100**

Course Code	Course Name	L-T-P:C	Year of Introduction
U100	Language lab/CAD Practice/Bridge courses/Micro Projects etc	0-0-2:1	2016

No.	Course Outcome - U100 - Language lab/CAD Practice/Bridge courses/Micro Projects etc	Target
CO1	Apply the relevant knowledge and skills, which are acquired within the technical area, to a given problem	60%
CO2	Analyze and discuss problems and handle larger problems on the advanced level within the technical area within given constraints, even with limited information.	60%
CO3	Able to document and present one's own work, for a given target group, with strict requirements on structure, format, and language usage	60%
CO4	Simulate and Test whether the work reached at a substantiated conclusion	60%
CO5	Identify one's need for further knowledge and continuously develop one's own competencies	60%

**COURSE END SURVEY - U100 - Language lab/CAD Practice/Bridge courses/Micro Projects etc**

Sl.No	Questions & Options
CO1	To what extent you are able to apply the relevant knowledge and skills, which are acquired within the technical area, to a given problem? Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO2	To what extent you are able to analyze and discuss problems and handle larger problems on the advanced level within the technical area within given constraints, even with limited information? Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO3	To what extent you are able to document and present one's own work, for a given target group, with strict requirements on structure, format, and language usage? Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO4	To what extent you are able to simulate and test whether the work reached at a substantiated conclusion?

	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO5	To what extent you are able to Identify one's need for further knowledge and continuously develop one's own competencies?
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>

**CO->PO MAPPING - U100 - Language lab/CAD Practice/Bridge courses/Micro Projects etc**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1												
CO2												
CO3												
CO4												
CO5												

**CO->PSO MAPPING - U100 - Language lab/CAD Practice/Bridge courses/Micro Projects etc**

CO/PSO	PSO1	PSO2	PSO3
CO1			
CO2			
CO3			
CO4			
CO5			

**COURSE->PO MAPPING - U100 - Language lab/CAD Practice/Bridge courses/Micro Projects etc**

U100/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

**COURSE->PSO MAPPING - U100 - Language lab/CAD Practice/Bridge courses/Micro Projects etc**

U100/PSO	PSO1	PSO2	PSO3

**MAT101**

Course Code	Course Name	L-T-P:C	Year of Introduction
MAT101	LINEAR ALGEBRA AND CALCULUS	3-1-0:4	2019

No.	Course Outcome - MAT101 - LINEAR ALGEBRA AND CALCULUS	Target
CO1	Solve systems of linear equations, diagonalize matrices and characterize quadratic forms	60%
CO2	Compute the partial and total derivatives and maxima and minima of multivariable functions	60%

CO3	Compute multiple integrals and apply them to find areas and volumes of geometrical shapes, mass and center of gravity of plane laminas	55%
CO4	Perform various tests to determine whether a given series is convergent, absolutely convergent or conditionally convergent	60%
CO5	Determine the Taylor and Fourier series expansion of functions and learn their applications	60%

**COURSE END SURVEY - MAT101 - LINEAR ALGEBRA AND CALCULUS**

Sl.No	Questions & Options
CO1	To what extent are you able to solve systems of linear equations, diagonalize matrices and characterise quadratic forms ?
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO2	To what extent are you are able to compute the partial and total derivatives and maxima and minima of multivariable functions ?
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO3	To what extent are you are able to compute multiple integrals and apply them to find areas and volumes of geometrical shapes, mass and centre of gravity of plane laminas ?
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO4	To what extent are you are able to perform various tests to determine whether a given series is convergent, absolutely convergent or conditionally convergent ?
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO5	To what extent are you able to determine the Taylor and Fourier series expansion of functions and learn their applications ?
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>

**CO->PO MAPPING - MAT101 - LINEAR ALGEBRA AND CALCULUS**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	3	1							1
CO2	3	3	3	3	1							1
CO3	3	3	3	3	2							1
CO4	3	2	3	2	2							1
CO5	3	3	3	3	2							1

**CO->PSO MAPPING - MAT101 - LINEAR ALGEBRA AND CALCULUS**

CO/PSO	PSO1	PSO2	PSO3
CO1	3		
CO2	3		
CO3	3		

CO4	3		
CO5	3		

**COURSE->PO MAPPING - MAT101 - LINEAR ALGEBRA AND CALCULUS**

MAT101/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	3	3	3	2							1

**COURSE->PSO MAPPING - MAT101 - LINEAR ALGEBRA AND CALCULUS**

MAT101/PSO	PSO1	PSO2	PSO3
	3		

**PHT110**

Course Code	Course Name	L-T-P:C	Year of Introduction
PHT110	ENGINEERING PHYSICS B	3-1-0:4	2019

No.	Course Outcome - PHT110 - ENGINEERING PHYSICS B	Target
CO1	Compute the quantitative aspects of waves and oscillations in engineering systems.	60%
CO2	Apply the interaction of light with matter through interference, diffraction and identify these phenomena in different natural optical processes and optical instruments.	60%
CO3	Analyze the behaviour of matter in the atomic and subatomic level through the principles of quantum mechanics to perceive the microscopic processes in electronic devices.	60%
CO4	Apply the knowledge of ultrasonics in non-destructive testing and use the principles of acoustics to explain the nature and characterization of acoustic design and to provide a safe and healthy environment	60%
CO5	Apply the comprehended knowledge about laser and fibre optic communication systems in various engineering applications	60%

**COURSE END SURVEY - PHT110 - ENGINEERING PHYSICS B**

Sl.No	Questions & Options
CO1	To what extent you are able to compute the quantitative aspects of waves and oscillations in engineering systems
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO2	To what extent you are able to apply interference and diffraction in different natural optical processes and optical instruments
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO3	To what extent you are able to analyze the behavior of matter in the atomic and subatomic level through the principles of quantum mechanics ?. How can it be used to perceive the microscopic processes in electronic devices ?

	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO4	To what extent you are able to apply the knowledge of ultrasonics in non-destructive testing ?. How the principles of acoustics can be used to improve acoustic design and to provide a safe and healthy environment.
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO5	To what extent you are able to apply laser and fibre optic communication systems in various engineering applications
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>

**CO->PO MAPPING - PHT110 - ENGINEERING PHYSICS B**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	2							2	
CO2	3	2	2		2							
CO3	3	2	2	2								
CO4	3			2	2						3	
CO5	3		2	2	2						3	

**CO->PSO MAPPING - PHT110 - ENGINEERING PHYSICS B**

CO/PSO	PSO1	PSO2	PSO3
CO1	2		
CO2	2		
CO3	2		
CO4	2		
CO5	2		

**COURSE->PO MAPPING - PHT110 - ENGINEERING PHYSICS B**

PHT110/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	2	2	2	2						3	

**COURSE->PSO MAPPING - PHT110 - ENGINEERING PHYSICS B**

PHT110/PSO	PSO1	PSO2	PSO3
	2		

**EST110**

Course Code	Course Name	L-T-P:C	Year of Introduction
EST110	ENGINEERING GRAPHICS	2-0-2:3	2019

No.	Course Outcome - EST110 - ENGINEERING GRAPHICS	Target
CO1	Demonstrate Engineering Drawing Standards (as per BIS), dimensioning and preparation of drawings leading to illustration of Graphics as the communication language of Engineers	65%
CO2	Interpret engineering drawings, leading to enhanced presentation skills of 3-D objects in 2-D plane / paper and improved visualization of physical objects.	65%
CO3	Apply the principles of orthographic projections of lines, solids and sectioned views in the design of pipeline systems.	65%
CO4	Prepare isometric and perspective projections that help to reconstruct solutions to real-time engineering problems in 3D to provide better understanding.	65%
CO5	Create surface development of objects which will help to develop suitable models for industrial applications.	65%
CO6	Recognize the importance of CAD software, and develop AutoCAD skills to transfer technical data and sketches into electronic drawing.	65%

**COURSE END SURVEY - EST110 - ENGINEERING GRAPHICS**

Sl.No	Questions & Options
CO1	To what extent you are able to demonstrate Engineering Drawing Standards (as per BIS), dimensioning and preparation of drawings leading to illustration of Graphics as the communication language of Engineers?
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO2	To what extent you are able to interpret engineering drawings, leading to enhanced presentation skills of 3-D objects in 2-D plane / paper and improved visualization of physical objects?
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO3	To what extent you are able to apply the principles of orthographic projections of lines, solids and sectioned views in the design of pipeline systems?
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO4	To what extent you are able to prepare isometric and perspective projections that help to reconstruct solutions to real-time engineering problems in 3D to provide better understanding?
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO5	To what extent you are able to create surface development and generate projections of penetrated objects which will help to develop suitable models for industrial applications?
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO6	To what extent you are able to recognize the importance of CAD software, and develop AutoCAD skills to transfer technical data and sketches into electronic drawing?
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>

**CO->PO MAPPING - EST110 - ENGINEERING GRAPHICS**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
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CO1	2	3	2			2		3		3	3	3
CO2	2	3	2	2	2	2		2		3		3
CO3	2	2	2					2		3		
CO4	2	2		2						3		3
CO5	2	2								3		
CO6	3	3	2	3		3				3		3

**CO->PSO MAPPING - EST110 - ENGINEERING GRAPHICS**

CO/PSO	PSO1	PSO2	PSO3
CO1			
CO2			
CO3			
CO4			
CO5			
CO6			

**COURSE->PO MAPPING - EST110 - ENGINEERING GRAPHICS**

EST110/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	3	2	3	2	3		3		3	3	3

**COURSE->PSO MAPPING - EST110 - ENGINEERING GRAPHICS**

EST110/PSO	PSO1	PSO2	PSO3

**EST130**

Course Code	Course Name	L-T-P:C	Year of Introduction
EST130	BASICS OF ELECTRICAL & ELECTRONICS ENGINEERING	4-0-0:4	2019

No.	Course Outcome - EST130 - BASICS OF ELECTRICAL & ELECTRONICS ENGINEERING	Target
CO1	Apply fundamental concepts and circuit laws to solve simple DC electric and magnetic circuits	60%
CO2	Develop and solve models of magnetic circuits	60%
CO3	Apply the fundamental laws of electrical engineering to solve simple ac circuits on steady state	60%
CO4	Identify and select necessary components used in various electronic circuits.	60%

CO5	Describe and outline the working principle of a voltage amplifier and electronic instrumentation system	60%
CO6	Explain the principle of radio and cellular communication	60%

**COURSE END SURVEY - EST130 - BASICS OF ELECTRICAL & ELECTRONICS ENGINEERING**

Sl.No	Questions & Options
CO1	To what extent you are able to apply fundamental concepts and circuit laws to solve simple DC electric and magnetic circuits
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO2	To what extent you are able to develop and solve models of magnetic circuits
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO3	To what extent you are able to apply the fundamental laws of electrical engineering to solve simple ac circuits on steady state
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO4	To what extent you are able to identify and select necessary components used in various electronic circuits.
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO5	To what extent you are able to describe and outline the working principle of a voltage amplifier and electronic instrumentation system
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO6	To what extent you are able to explain the principle of radio and cellular communication
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>

**CO->PO MAPPING - EST130 - BASICS OF ELECTRICAL & ELECTRONICS ENGINEERING**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2		1	3						2	
CO2	2	2									2	
CO3	2	2		2								
CO4	2	2										
CO5	2	2	1		2							
CO6	2	2	2		3						2	

**CO->PSO MAPPING - EST130 - BASICS OF ELECTRICAL & ELECTRONICS ENGINEERING**

CO/PSO	PSO1	PSO2	PSO3
CO1	2		
CO2	2		

CO3	2		
CO4			
CO5			
CO6			

**COURSE->PO MAPPING - EST130 - BASICS OF ELECTRICAL & ELECTRONICS ENGINEERING**

EST130/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	2	2	2	2	3						2	

**COURSE->PSO MAPPING - EST130 - BASICS OF ELECTRICAL & ELECTRONICS ENGINEERING**

EST130/PSO	PSO1	PSO2	PSO3
	2		

**ESL130**

Course Code	Course Name	L-T-P:C	Year of Introduction
ESL130	ELECTRICAL & ELECTRONICS WORKSHOP	0-0-2:1	2019

No.	Course Outcome - ESL130 - ELECTRICAL & ELECTRONICS WORKSHOP	Target
CO1	Demonstrate safety measures against electric shocks	56%
CO2	Identify the tools used for electrical wiring, electrical accessories, wires, cables, batteries and standard symbols	56%
CO3	Develop the connection diagram, identify the suitable accessories and materials necessary for wiring simple lighting circuits for domestic buildings	56%
CO4	Identify and test various electronic components and equipments	56%
CO5	Draw circuit schematics with EDA tools	56%
CO6	Assemble and test electronic circuits on boards	56%

**COURSE END SURVEY - ESL130 - ELECTRICAL & ELECTRONICS WORKSHOP**

Sl.No	Questions & Options
CO1	To what extent you are able to demonstrate safety measures against electric shocks
	Answer Choice- <i>Extremely helpful/Moderately helpful/ Helpful/A little helpful/Not at all helpful</i>
CO2	To what extent you are able to identify the tools used for electrical wiring, electrical accessories, wires, cables, batteries and standard symbols
	Answer Choice- <i>Extremely helpful/Moderately helpful/ Helpful/A little helpful/Not at all helpful</i>
CO3	To what extent you are able to develop the connection diagram, identify the suitable accessories and materials necessary for wiring simple lighting circuits for domestic buildings

	Answer Choice- <i>Extremely helpful/Moderately helpful/ Helpful/A little helpful/Not at all helpful</i>
CO4	To what extent you are able to identify and test various electronic components and equipments
	Answer Choice- <i>Extremely helpful/Moderately helpful/ Helpful/A little helpful/Not at all helpful</i>
CO5	To what extent you are able to draw circuit schematics with EDA tools
	Answer Choice- <i>Extremely helpful/Moderately helpful/ Helpful/A little helpful/Not at all helpful</i>
CO6	To what extent you are able to assemble and test electronic circuits on boards
	Answer Choice- <i>Extremely helpful/Moderately helpful/ Helpful/A little helpful/Not at all helpful</i>

**CO->PO MAPPING - ESL130 - ELECTRICAL & ELECTRONICS WORKSHOP**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1						1		2	2			
CO2	1		2		3						1	
CO3	2	1			3							
CO4	1								2			
CO5					2				2			
CO6									2			

**CO->PSO MAPPING - ESL130 - ELECTRICAL & ELECTRONICS WORKSHOP**

CO/PSO	PSO1	PSO2	PSO3
CO1		1	
CO2			
CO3	1		
CO4			
CO5			
CO6	1		

**COURSE->PO MAPPING - ESL130 - ELECTRICAL & ELECTRONICS WORKSHOP**

ESL130/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	2	1	2		3	1		2	2		1	

**COURSE->PSO MAPPING - ESL130 - ELECTRICAL & ELECTRONICS WORKSHOP**

ESL130/PSO	PSO1	PSO2	PSO3
	1	1	

PHL120

Course Code	Course Name	L-T-P:C	Year of Introduction
PHL120	ENGINEERING PHYSICS LAB	0-0-2:1	2019

No.	Course Outcome - PHL120 - ENGINEERING PHYSICS LAB	Target
CO1	Apply modern instruments like CRO, strain gauge to measure the basic physical quantities viz. frequency and amplitude of a wave pattern, strain etc. Carryout measurement of wave pattern in a stretched string and the corresponding frequency values using a Melde's string apparatus.	60%
CO2	Determine the wavelength of monochromatic beam of light and thickness of micro-thin object etc. by forming Newton's rings pattern and an air wedge fringe pattern. Carryout the measurement of wavelength by diffraction of plane transmission grating and the spectra formed by a monochromatic beam of light and a laser.	60%
CO3	Carryout the measurement of wavelength of a semiconductor diode Laser by grating.	60%
CO4	Evaluate the properties of a solar cell and LED through its I-V characteristics.	60%
CO5	Measurement of numerical aperture of an optic fibre	60%

**COURSE END SURVEY - PHL120 - ENGINEERING PHYSICS LAB**

Sl.No	Questions & Options
CO1	1. To what extent you are able to apply modern instruments like CRO, strain gauge to measure the basic physical quantities viz. frequency and amplitude of a wave pattern, strain etc. (b) Carryout measurement of wave pattern in a stretched string and the corresponding frequency values using a Melde's string apparatus.  Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO2	2. To what extent you are able to determine the wavelength of monochromatic beam of light and thickness of micro-thin object etc. by forming Newton's rings pattern and an air wedge fringe pattern.  Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO3	3. To what extent you are able to Carryout the measurement of wavelength of a semiconductor diode Laser by grating.  Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO4	4. To what extent you are able to evaluate the properties of a solar cell and LED through its I-V characteristics.  Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO5	5. To what extent you are able to determine the losses and measure numerical aperture of an optic fibre  Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>

**CO->PO MAPPING - PHL120 - ENGINEERING PHYSICS LAB**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2						2			2
CO2	3	2	2						2			2
CO3	3	2	2						2			2

CO4	3	2	2						2			2
CO5	3	2	2						2			2

**CO->PSO MAPPING - PHL120 - ENGINEERING PHYSICS LAB**

CO/PSO	PSO1	PSO2	PSO3
CO1	2		
CO2	2		
CO3	2		
CO4	2		
CO5	2		

**COURSE->PO MAPPING - PHL120 - ENGINEERING PHYSICS LAB**

PHL120/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	2	2						2			2

**COURSE->PSO MAPPING - PHL120 - ENGINEERING PHYSICS LAB**

PHL120/PSO	PSO1	PSO2	PSO3
	2		

**HUN101**

Course Code	Course Name	L-T-P:C	Year of Introduction
HUN101	LIFE SKILLS	2-0-2:0	2019

No.	Course Outcome - HUN101 - LIFE SKILLS	Target
CO1	Define and identify different life skills required in personal and professional life (Remembering-1).	60%
CO2	Develop self- awareness and apply well-defined techniques to cope with emotions, and stress (Creating-6).	60%
CO3	Examine the basic mechanics of effective communication and demonstrate through presentations (Applying-3).	60%
CO4	Judge a case or a situation by taking part in group discussions (Evaluating-5).	60%
CO5	Analyse and solve new problems using creative and critical thinking (Analysing-4).	60%
CO6	Discuss the basics of teamwork and leadership (Understanding-2).	60%

**COURSE END SURVEY - HUN101 - LIFE SKILLS**

Sl.No	Questions & Options
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CO1	I am able to define and identify different life skills required in personal and professional life.
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO2	I am able to develop self- awareness and apply well-defined techniques to cope with emotions, and stress.
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO3	I am able to examine the basic mechanics of effective communication and demonstrate through presentations.
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO4	I am able to Judge a case or a situation by taking part in group discussions
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO5	I am able to analyse and solve new problems using creative and critical thinking
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO6	I am capable of form team and take leadership
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5

**CO->PO MAPPING - HUN101 - LIFE SKILLS**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	1	1	1	1	3	1	2	3	2	3	2
CO2	1		1			3	1	3	3	3	3	2
CO3	1	1	1		1	2	1	3	3	3	3	3
CO4	1		2		2	2	1	3	3	2	3	3
CO5	1	3	3	3	2	1	2	3	3	3	2	2
CO6	1		1			2	1	3	3	3	3	2

**CO->PSO MAPPING - HUN101 - LIFE SKILLS**

CO/PSO	PSO1	PSO2	PSO3
CO1		2	
CO2			
CO3			
CO4			
CO5			
CO6			

**COURSE->PO MAPPING - HUN101 - LIFE SKILLS**

HUN101/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	1	3	3	3	2	3	2	3	3	3	3	3

**COURSE->PSO MAPPING - HUN101 - LIFE SKILLS**

HUN101/PSO	PSO1	PSO2	PSO3
		2	

**EST100**

Course Code	Course Name	L-T-P:C	Year of Introduction
EST100	ENGINEERING MECHANICS	2-1-0:3	2019

No.	Course Outcome - EST100 - ENGINEERING MECHANICS	Target
CO1	Revise the basic principles of statics and evaluate reactions under equilibrium	55%
CO2	Analyze planar and spatial force systems	55%
CO3	Determine friction under static conditions	55%
CO4	Comprehend the properties of planes and solids	55%
CO5	Identify basic concepts of kinetics and kinematics	55%
CO6	Assess the concept of vibrations	55%

**COURSE END SURVEY - EST100 - ENGINEERING MECHANICS**

Sl.No	Questions & Options
CO1	To what extent are you able to revise the basic principles of statics and evaluate reactions under equilibrium ?
	Answer Choice- <i>Very high degree/High Degree/Moderate degree/Small Degree/Not at all</i>
CO2	To what extent are you able to analyze planar and spatial force systems ?
	Answer Choice- <i>5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5</i>
CO3	To what extent are you able to determine friction under static conditions ?
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO4	To what extent are you able to comprehend the properties of planes and solids ?
	Answer Choice- <i>Very high degree/High Degree/Moderate degree/Small Degree/Not at all</i>
CO5	To what extent are you able to identify basic concepts of kinetics and kinematics ?
	Answer Choice- <i>Very satisfied/Satisfied/Neither satisfied nor dissatisfied/Dissatisfied /Very dissatisfied</i>
CO6	To what extent are you able to assess the concept of vibrations ?



Answer Choice- *Extremely helpful/Moderately helpful/ Helpful/A little helpful/Not at all helpful*

**CO->PO MAPPING - EST100 - ENGINEERING MECHANICS**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2						2		
CO2	3	3	2	2						2		
CO3	3	3	2	2						2		
CO4	3	3	2	2						2		
CO5	3	3	2	2						2		
CO6	3	3	2	2						2		

**CO->PSO MAPPING - EST100 - ENGINEERING MECHANICS**

CO/PSO	PSO1	PSO2	PSO3
CO1	3	1	
CO2	3	1	
CO3	3	1	
CO4	3	1	
CO5	3	1	
CO6	3	1	

**COURSE->PO MAPPING - EST100 - ENGINEERING MECHANICS**

EST100/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	3	2	2						2		

**COURSE->PSO MAPPING - EST100 - ENGINEERING MECHANICS**

EST100/PSO	PSO1	PSO2	PSO3
	3	1	

**PHT100**

Course Code	Course Name	L-T-P:C	Year of Introduction
PHT100	ENGINEERING PHYSICS A	3-1-0:4	2019

No.	Course Outcome - PHT100 - ENGINEERING PHYSICS A	Target
CO1	Compute the quantitative aspects of waves and oscillations in engineering systems.	58%

CO2	Apply the interaction of light with matter through interference, diffraction and identify these phenomena in different natural optical processes and optical instruments.	58%
CO3	Analyze the behaviour of matter in the atomic and subatomic level through the principles of quantum mechanics to perceive the microscopic processes in electronic devices.	58%
CO4	Classify the properties of magnetic materials and apply vector calculus to static magnetic fields and use Maxwell's equations to diverse engineering problems	58%
CO5	Analyze the principles behind various superconducting applications, explain the working of solid state lighting devices and fibre optic communication system	58%

**COURSE END SURVEY - PHT100 - ENGINEERING PHYSICS A**

Sl.No	Questions & Options
CO1	To what extent are you able to compute the quantitative aspects of waves and oscillations in engineering systems ? Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO2	To what extent are you able to apply interference and diffraction in different natural optical processes and optical instruments ? Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO3	To what extent are you able to analyze the behavior of matter in the atomic and subatomic level through the principles of quantum mechanics ?. How can it be used to perceive the microscopic processes in electronic devices ? Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO4	To what extent are you able to classify the properties of magnetic materials and apply vector calculus to static magnetic fields and use Maxwell's equations to diverse engineering problems ? Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO5	To what extent are you able to apply the principles behind various superconducting applications, explain the working of solid state lighting devices and fibre optic communication system ? Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>

**CO->PO MAPPING - PHT100 - ENGINEERING PHYSICS A**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2		1								
CO2	3	2		1								
CO3	3	2		1								
CO4	3	1		1								
CO5	3	1		1								

**CO->PSO MAPPING - PHT100 - ENGINEERING PHYSICS A**

CO/PSO	PSO1	PSO2	PSO3
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CO1			
CO2			
CO3			
CO4			
CO5			

**COURSE->PO MAPPING - PHT100 - ENGINEERING PHYSICS A**

PHT100/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	2		1								

**COURSE->PSO MAPPING - PHT100 - ENGINEERING PHYSICS A**

PHT100/PSO	PSO1	PSO2	PSO3

**SEMESTER-2****MA102**

Course Code	Course Name	L-T-P:C	Year of Introduction
MA102	Differential Equations	3-1-0:4	2016

No.	Course Outcome - MA102 - Differential Equations	Target
CO1	Demonstrate the use of homogeneous differential equations for the solution of engineering problems	62%
CO2	Solve non-homogeneous ordinary differential equations	60%
CO3	Demonstrate the properties and use of Fourier series and Euler's formulas	60%
CO4	Illustrate the use of Partial differential equations and their solutions	62%
CO5	Apply partial differential equations and Fourier series to solve one - dimensional wave equations	60%
CO6	Apply partial differential equations and Fourier series to solve one - dimensional heat equations	60%

**COURSE END SURVEY - MA102 - Differential Equations**

Sl.No	Questions & Options
CO1	To what extent you are able to demonstrate the use of homogeneous differential equations for the solution of engineering problems
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO2	To what extent you are able to solve non-homogeneous ordinary differential equations
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>

CO3	To what extent you are able to demonstrate the properties and use of Fourier series and Euler's formulas
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO4	To what extent you are able to illustrate the use of Partial differential equations and their solutions
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO5	To what extent you are able to apply partial differential equations and Fourier series to solve one - dimensional wave equations
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO6	To what extent you are able to apply partial differential equations and Fourier series to solve one - dimensional heat equations
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>

**CO->PO MAPPING - MA102 - Differential Equations**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	3							2	2
CO2	3	3	3	2							2	
CO3	3	3	3	3							2	
CO4	3	3	3	2							2	
CO5	3	3	3	2							2	
CO6	3	3	3	2							2	

**CO->PSO MAPPING - MA102 - Differential Equations**

CO/PSO	PSO1	PSO2	PSO3
CO1	3	1	
CO2	3	1	
CO3	3	1	
CO4	3	1	
CO5	3	1	
CO6	3	1	

**COURSE->PO MAPPING - MA102 - Differential Equations**

MA102/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	3	3	3							2	2

**COURSE->PSO MAPPING - MA102 - Differential Equations**

	PSO1	PSO2	PSO3

MA102/PSO	3	1	
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**PH100**

Course Code	Course Name	L-T-P:C	Year of Introduction
PH100	Engineering Physics	3-1-0:4	2016

No.	Course Outcome - PH100 - Engineering Physics	Target
CO1	Analyse different phenomena associated with the generation and propagation of oscillations and waves	62%
CO2	Demonstrate wave-like phenomena associated with light and use them to measure its properties	62%
CO3	Illustrate the phenomenon of superconductivity and evaluate the properties of the superconducting state	62%
CO4	Identify the features of quantum and statistical phenomena and demonstrate the dynamics of microscopic entities.	57%
CO5	Describe the production and properties of acoustic and ultrasonic waves and demonstrate their applications.	62%
CO6	Outline the construction and properties of different lasers and optoelectronic devices, and identify their applications	62%

**COURSE END SURVEY - PH100 - Engineering Physics**

Sl.No	Questions & Options
CO1	To what extent you are able to analyse different phenomena associated with the generation and propagation of oscillations and waves
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO2	To what extent you are able to demonstrate wave-like phenomena associated with light and use them to measure its properties
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO3	To what extent you are able to illustrate the phenomenon of superconductivity and evaluate the properties of the superconducting state
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO4	To what extent you are able to Identify the features of quantum and statistical phenomena and demonstrate the dynamics of microscopic entities.
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO5	To what extent you are able to describe the production and properties of acoustic and ultrasonic waves and demonstrate their applications.
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>

CO6	To what extent you are able to outline the construction and properties of different lasers and optoelectronic devices, and identify their applications
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>

**CO->PO MAPPING - PH100 - Engineering Physics**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	1	2								
CO2	3	2	1	2	2							
CO3	3	2	1	2								
CO4	3	2	1	2								
CO5	3	2	1	2	3							
CO6	3	2	1	2	3							

**CO->PSO MAPPING - PH100 - Engineering Physics**

CO/PSO	PSO1	PSO2	PSO3
CO1			
CO2			
CO3			
CO4			
CO5			
CO6			

**COURSE->PO MAPPING - PH100 - Engineering Physics**

PH100/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	2	1	2	3							

**COURSE->PSO MAPPING - PH100 - Engineering Physics**

PH100/PSO	PSO1	PSO2	PSO3

**ME100**

Course Code	Course Name	L-T-P:C	Year of Introduction
ME100	Basics of Mechanical Engineering	2-1-0:3	2016

No.	Course Outcome - ME100 - Basics of Mechanical Engineering	Target
CO1	Compare various cycles involved in different thermodynamic processes	61%

CO2	Analyze the working of various energy conversion devices	61%
CO3	Apply basic thermodynamic principles to refrigeration and air conditioning systems	61%
CO4	Discuss different parts of an automobile and related power transmission devices	61%
CO5	Demonstrate working knowledge on manufacturing processes and machining operations	61%

**COURSE END SURVEY - ME100 - Basics of Mechanical Engineering**

Sl.No	Questions & Options
CO1	Students were able to understand various thermodynamic processes and cycles.
	Answer Choice- <i>Strongly Agree/Agree/Neutral Disagree/Strongly disagree</i>
CO2	Students came to know and learn about various turbines, pumps, boilers and other energy conversion devices
	Answer Choice- <i>Strongly Agree/Agree/Neutral Disagree/Strongly disagree</i>
CO3	Students learnt basics and working of various refrigeration systems.
	Answer Choice- <i>Strongly Agree/Agree/Neutral Disagree/Strongly disagree</i>
CO4	Students got acquainted with parts of an automobile and its power transmission systems.
	Answer Choice- <i>Strongly Agree/Agree/Neutral Disagree/Strongly disagree</i>
CO5	Students were able to learn about various manufacturing processes and machines used for manufacturing.
	Answer Choice- <i>Strongly Agree/Agree/Neutral Disagree/Strongly disagree</i>

**CO->PO MAPPING - ME100 - Basics of Mechanical Engineering**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2		1							2
CO2	3	2	2	2	1							2
CO3	3	2	2	2	1							2
CO4	3	2	1	1	1							2
CO5	3	2	2	2	1							2

**CO->PSO MAPPING - ME100 - Basics of Mechanical Engineering**

CO/PSO	PSO1	PSO2	PSO3
CO1	2	1	
CO2	2		
CO3	2	1	
CO4	2	1	
CO5		2	

**COURSE->PO MAPPING - ME100 - Basics of Mechanical Engineering**

ME100/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	2	2	2	1							2

**COURSE->PSO MAPPING - ME100 - Basics of Mechanical Engineering**

ME100/PSO	PSO1	PSO2	PSO3
	2	2	

**BE100**

Course Code	Course Name	L-T-P:C	Year of Introduction
BE100	Engineering Mechanics	3-1-0:4	2016

No.	Course Outcome - BE100 - Engineering Mechanics	Target
CO1	Analyse reactions of various supports under equilibrium	55%
CO2	Determine the forces in planar and spatial systems	55%
CO3	Comprehend the properties of planes and solids	55%
CO4	Determine friction under static conditions	55%
CO5	Identify basic concepts of dynamic problems	55%

**COURSE END SURVEY - BE100 - Engineering Mechanics**

Sl.No	Questions & Options
CO1	To what extend you are able to determine the reactions of various supports under equilibrium condition
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO2	To what extend you are able to determine the forces in planar and spatial systems
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO3	How far you are able to comprehend the properties of planes and solids
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO4	How far you are able to determine the friction under static conditions
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO5	How far you are able to identify the basic concepts of dynamic problems
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5

**CO->PO MAPPING - BE100 - Engineering Mechanics**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
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CO1	3	2	1	3	2							2
CO2	3	2		3	2							2
CO3	3	2	2	3	2						3	2
CO4	3	2		3	2						3	2
CO5	3	2		3	2							2

**CO->PSO MAPPING - BE100 - Engineering Mechanics**

CO/PSO	PSO1	PSO2	PSO3
CO1	3	2	3
CO2	3	2	2
CO3	3	1	2
CO4	3	1	2
CO5	3	3	2

**COURSE->PO MAPPING - BE100 - Engineering Mechanics**

BE100/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	2	2	3	2						3	2

**COURSE->PSO MAPPING - BE100 - Engineering Mechanics**

BE100/PSO	PSO1	PSO2	PSO3
	3	3	3

**BE102**

Course Code	Course Name	L-T-P:C	Year of Introduction
BE102	Design & Engineering	2-0-2:3	2016

No.	Course Outcome - BE102 - Design & Engineering	Target
CO1	Identify the different elements involved in good designs and practice them when called for.	66%
CO2	Solve the different stages of Design and formulate detailed designs with solid modeling and visualization.	66%
CO3	Develop the prototype and propose various stages towards final product design.	62%
CO4	Build a broader perspective of design covering the function, cost, environmental sensitivity, safety and factors other than from engineering analysis	62%
CO5	Identify product oriented and user oriented aspects that make the customer required design.	60%

CO6	Utilize various modern engineering methods and build basic knowledge of Intellectual Property Rights.	62%
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**COURSE END SURVEY - BE102 - Design & Engineering**

Sl.No	Questions & Options
CO1	How far you have been able to identify the different elements involved in good designs and practice them when called for?
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO2	How far you have been able to solve the different stages of design and formulate detailed designs with solid modeling and visualization?
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO3	How far you have been able to develop the prototype and propose various stages towards final product design.
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO4	How far you have been able to build a broader perspective of design covering the function, cost, environmental sensitivity, safety and factors other than from engineering analysis
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO5	How far you have been able to Identify product oriented and user oriented aspects that make the customer required design?
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO6	How far you have been able to utilize various modern engineering methods and build basic knowledge of Intellectual Property Rights.
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>

**CO->PO MAPPING - BE102 - Design & Engineering**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	3			3	2	3		2		
CO2	3	3	3		2				3	3		
CO3	3	2	3		2				3	3	3	
CO4	3	2	3		2	3	3	3		2		
CO5	3	2	3		1							
CO6	3	2	3	1	2	2		3		3		3

**CO->PSO MAPPING - BE102 - Design & Engineering**

CO/PSO	PSO1	PSO2	PSO3
CO1	3		2
CO2	3	3	3

CO3	3	2	3
CO4	3	3	3
CO5	1	1	2
CO6	2	2	1

**COURSE->PO MAPPING - BE102 - Design & Engineering**

BE102/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	3	3	1	2	3	3	3	3	3	3	3

**COURSE->PSO MAPPING - BE102 - Design & Engineering**

BE102/PSO	PSO1	PSO2	PSO3
	3	3	3

**EE100**

Course Code	Course Name	L-T-P:C	Year of Introduction
EE100	Basics of Electrical Engineering	2-1-0:3	2016

No.	Course Outcome - EE100 - Basics of Electrical Engineering	Target
CO1	Summarize the basics of electrical engineering applied to various engineering problems	60%
CO2	Perform mathematical analysis of electric circuits and their power measurement	55%
CO3	Illustrate the basics of magnetism and apply them to electric machines	55%
CO4	Assess the basic structure of machines and power systems	60%
CO5	Evaluate the basic circuits and machines used in real world	60%

**COURSE END SURVEY - EE100 - Basics of Electrical Engineering**

Sl.No	Questions & Options
CO1	To what extend you are able to understand the the basics of electrical engineering
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO2	To what extend you are able to Perform mathematical analysis of electric circuits and its power measurement
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO3	To what extend you are able to illustrate the basics of magnetism and apply it to electric machines
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO4	To what extend you are able to understand the basic structure of machines and power systems

	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO5	To what extend you are able to evaluate the basic circuits and machines used in real world
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>

**CO->PO MAPPING - EE100 - Basics of Electrical Engineering**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	3	2	2	2				2	2
CO2	3	2	2	3	2	2	2				2	2
CO3	3	2	2	3	2		1				2	2
CO4	3	2	2	3	2	2	2				2	2
CO5	3	2	2	3	3	2	2				2	2

**CO->PSO MAPPING - EE100 - Basics of Electrical Engineering**

CO/PSO	PSO1	PSO2	PSO3
CO1	2	2	2
CO2	2	2	2
CO3	2	2	2
CO4	2	2	2
CO5	2	2	2

**COURSE->PO MAPPING - EE100 - Basics of Electrical Engineering**

EE100/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	2	2	3	3	2	2				2	2

**COURSE->PSO MAPPING - EE100 - Basics of Electrical Engineering**

EE100/PSO	PSO1	PSO2	PSO3
	2	2	2

**PH110**

Course Code	Course Name	L-T-P:C	Year of Introduction
PH110	Engineering Physics Lab	0-0-2:1	2016

No.	Course Outcome - PH110 - Engineering Physics Lab	Target
CO1	Measure basic physical quantities, such as voltage, frequency, temperature etc and evaluate measurement accuracy.	70%

CO2	Measure and analyse the properties of electrical and acoustic waves and oscillations, and demonstrate resonance.	70%
CO3	Demonstrate wave-like properties of light and measure the wavelength of monochromatic light sources	70%
CO4	Illustrate the propagation of light through an optical fibre and measure its numerical aperture	70%
CO5	Demonstrate the working of devices such as solar cells and photoelectric cells	70%
CO6	Organize an experimental set up and measure fundamental constants such as the Planck's constant.	70%

**COURSE END SURVEY - PH110 - Engineering Physics Lab**

Sl.No	Questions & Options
CO1	To what extent you are able to Measure basic physical quantities, such as voltage, frequency, temperature etc and evaluate measurement accuracy.
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO2	To what extent you are able to measure and analyse the properties of electrical and acoustic waves and oscillations, and demonstrate resonance.
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO3	To what extent you are able to demonstrate wave-like properties of light and measure the wavelength of monochromatic light sources
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO4	To what extent you are able to illustrate the propagation of light through an optical fibre and measure its numerical aperture
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO5	To what extent you are able to demonstrate the working of devices such as solar cells and photoelectric cells
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO6	To what extent you are able to organize an experimental set up and measure fundamental constants such as the Planck's constant.
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>

**CO->PO MAPPING - PH110 - Engineering Physics Lab**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2		2	2							
CO2	3	3		2	2							
CO3	3	3		2	2							
CO4	3	3		2	2							
CO5	3	2		2	2							

CO6	3	3		2	3							
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**CO->PSO MAPPING - PH110 - Engineering Physics Lab**

CO/PSO	PSO1	PSO2	PSO3
CO1			
CO2			
CO3			
CO4			
CO5			
CO6			

**COURSE->PO MAPPING - PH110 - Engineering Physics Lab**

PH110/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	3		2	3							

**COURSE->PSO MAPPING - PH110 - Engineering Physics Lab**

PH110/PSO	PSO1	PSO2	PSO3

**CY100**

Course Code	Course Name	L-T-P:C	Year of Introduction
CY100	Engineering Chemistry	3-1-0:4	2016

No.	Course Outcome - CY100 - Engineering Chemistry	Target
CO1	Demonstrate the principles of spectroscopy and apply them to explain chemical phenomena	65%
CO2	Illustrate principles and applications of various electrochemical techniques and cells.	65%
CO3	Describe instrumental methods like chromatography, conductivity and thermal analysis for chemical analysis.	60%
CO4	Recognize the properties and applications of engineering materials, such as polymers and nanomaterials	65%
CO5	Evaluate the properties of complex chemicals such as fuels and lubricants.	65%
CO6	Describe the properties of water and identify methods for water purification	65%

**COURSE END SURVEY - CY100 - Engineering Chemistry**

Sl.No	Questions & Options
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CO1	To what extent you are able to explain the principles of spectroscopy and apply them to explain chemical phenomena
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO2	To what extent you are able to explain the principles and applications of various electrochemical techniques and cells.
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO3	To what extent you are able to apply instrumental methods like chromatography, conductivity and thermal analysis for chemical analysis.
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO4	To what extent you are able to recognize the properties and applications of engineering materials, such as polymers and nanomaterials
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO5	To what extent you are able to evaluate the properties of complex chemicals such as fuels and lubricants.
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO6	To what extent you are able to describe the properties of water and identify methods for water purification
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>

**CO->PO MAPPING - CY100 - Engineering Chemistry**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2	3	3	3				1	3
CO2	3	3	2		3							1
CO3	3	3	2	2	3			2				
CO4	3	2	2	2	3							1
CO5	3	2	2		3							
CO6	3	2	2			3	3					2

**CO->PSO MAPPING - CY100 - Engineering Chemistry**

CO/PSO	PSO1	PSO2	PSO3
CO1	2		1
CO2	2		
CO3	2	1	1
CO4	2		1
CO5	2		1
CO6	2	1	1

**COURSE->PO MAPPING - CY100 - Engineering Chemistry**

CY100/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	3	2	2	3	3	3	2			1	3

**COURSE->PSO MAPPING - CY100 - Engineering Chemistry**

CY100/PSO	PSO1	PSO2	PSO3
	2	1	1

**CY110**

Course Code	Course Name	L-T-P:C	Year of Introduction
CY110	Engineering Chemistry Lab	0-0-2:1	2016

No.	Course Outcome - CY110 - Engineering Chemistry Lab	Target
CO1	Analyse and measure the quality of water and environmental pollution.	70%
CO2	Analyse and identify unknown compounds from spectral measurements.	70%
CO3	Prepare different polymers for industrial applications.	70%
CO4	Find the strength and pH of unknown solutions using different instrumental methods.	70%
CO5	Measure the percentage of metal present in metal ore.	70%
CO6	Apply and demonstrate theoretical concepts of Engineering Chemistry.	70%

**COURSE END SURVEY - CY110 - Engineering Chemistry Lab**

Sl.No	Questions & Options
CO1	To what extent you are able to analyse and measure the quality of water and environmental pollution.
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO2	To what extent you are able to analyse and identify unknown compounds from spectral measurements.
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO3	To what extent you are able to prepare different polymers for industrial applications.
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO4	To what extent you are able to find the strength and pH of unknown solutions using different instrumental methods.
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO5	To what extent you are able to measure the percentage of metal present in metal ore.
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>



CO6	To what extent you are able to apply and demonstrate theoretical concepts of Engineering Chemistry.
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>

**CO->PO MAPPING - CY110 - Engineering Chemistry Lab**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	3	2	3	3	3		2	2		2
CO2	3	2		2					2	2		
CO3	3	2	2	2					2	2	3	3
CO4	3	2	3	2	3				2	2		
CO5	3	2	3		3				2	2		
CO6	3	2	3	3	3	3				2	1	2

**CO->PSO MAPPING - CY110 - Engineering Chemistry Lab**

CO/PSO	PSO1	PSO2	PSO3
CO1	2	1	
CO2	2		
CO3	2		
CO4	2		
CO5	2		
CO6	2	1	1

**COURSE->PO MAPPING - CY110 - Engineering Chemistry Lab**

CY110/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	2	3	3	3	3	3		2	2	3	3

**COURSE->PSO MAPPING - CY110 - Engineering Chemistry Lab**

CY110/PSO	PSO1	PSO2	PSO3
	2	1	1

**ME110**

Course Code	Course Name	L-T-P:C	Year of Introduction
ME110	Mechanical Engineering Workshops	0-0-2:1	2016

No.	Course Outcome - ME110 - Mechanical Engineering Workshops	Target
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CO1	Demonstrate various manufacturing processes in a basic mechanical engineering workshop, like smithy, carpentry, foundry and fitting	75%
CO2	Identify various hand tools used in basic mechanical engineering workshop sections, like smithy, carpentry, foundry and fitting.	75%
CO3	Choose different measuring devices necessary to carry out work in a workshop.	75%
CO4	Demonstrate the operations of various machine tools like lathe, milling, drilling and shaping machines.	75%
CO5	Assemble and disassemble machines like IC engines.	75%
CO6	Construct models using basic mechanical workshop sections involving welding, moulding, smithy, carpentry etc.	75%

**COURSE END SURVEY - ME110 - Mechanical Engineering Workshops**

Sl.No	Questions & Options
CO1	Did you get the basic idea about smithy, carpentry, foundry and fitting
	Answer Choice- <i>Very high degree/High Degree/Moderate degree/Small Degree/Not at all</i>
CO2	Can you choose the apt tool for a particular operation in the four sections
	Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>
CO3	Are you able to select the proper measuring device required for a job
	Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>
CO4	Do you have a basic idea about the machine tools like lathe, milling, drilling and shaping machines
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO5	Can you assemble and disassemble a piston and cylinder of an IC Engine
	Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>
CO6	Can you choose tools and do a model independently
	Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>

**CO->PO MAPPING - ME110 - Mechanical Engineering Workshops**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	2		2	2	3	1	3	3		1
CO2	2	2			2	2	1	1	3	3		1
CO3	2	2	3		2	2	1	1	3	2		1
CO4	2	2	2		2	2	1	1		2		1
CO5	3	2			2	2			3	2		1
CO6	3	3	2		3	2	1	1	3	3		1

**CO->PSO MAPPING - ME110 - Mechanical Engineering Workshops**

CO/PSO	PSO1	PSO2	PSO3
CO1	2	2	
CO2	2	2	
CO3	2	1	
CO4	2	2	
CO5	2	1	
CO6	2	1	

**COURSE->PO MAPPING - ME110 - Mechanical Engineering Workshops**

ME110/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	3	3		3	2	3	1	3	3		1

**COURSE->PSO MAPPING - ME110 - Mechanical Engineering Workshops**

ME110/PSO	PSO1	PSO2	PSO3
	2	2	

**EE110**

Course Code	Course Name	L-T-P:C	Year of Introduction
EE110	Electrical Engineering Workshop	0-0-2:1	2016

No.	Course Outcome - EE110 - Electrical Engineering Workshop	Target
CO1	Describe Power supplies and their limitations, standard voltages and their tolerances, safety aspects of electrical systems and the importance of protective measures in wiring systems	60%
CO2	Demonstrate different configurations of wires, cables and other accessories used in wiring circuits and wire simple lighting circuits for domestic buildings	60%
CO3	Distinguish between light and power circuits to control and measure circuit parameters such as current, voltage and power	60%
CO4	Illustrate backup power supplies in domestic installations	60%
CO5	Demonstrate all aspects of energy conservation in electrical systems	60%

**COURSE END SURVEY - EE110 - Electrical Engineering Workshop**

Sl.No	Questions & Options
CO1	To what extent you are able to demonstrate Power supplies and their limitations, standard voltages and their tolerances, safety aspects of electrical systems and the importance of protective measures in wiring systems Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>

CO2	To what extent you are able to demonstrate different configurations of wires, cables and other accessories used in wiring circuits and wire simple lighting circuits for domestic buildings?
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO3	To what extent you are able to distinguish between light and power circuits to control and measure circuit parameters such as current, voltage and power
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO4	To what extent you are able to illustrate backup power supplies in domestic installations
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO5	To what extent you are able to demonstrate different aspects of energy conservation in electrical systems
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>

**CO->PO MAPPING - EE110 - Electrical Engineering Workshop**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1		2	3	2	2	3	2	2	2	2	2	2
CO2	2	2	3	2	2	3	2	2		2	2	2
CO3	2	2	3	2	2	3	2	2		2	3	2
CO4	2	2	3	2	2	3	2	2	2	2	3	2
CO5	2	2	3	2	2	3	3	2	2	2	3	2

**CO->PSO MAPPING - EE110 - Electrical Engineering Workshop**

CO/PSO	PSO1	PSO2	PSO3
CO1	2	2	2
CO2	2	2	2
CO3	2	2	2
CO4	2	2	2
CO5	2	2	2

**COURSE->PO MAPPING - EE110 - Electrical Engineering Workshop**

EE110/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	2	2	3	2	2	3	3	2	2	2	3	2

**COURSE->PSO MAPPING - EE110 - Electrical Engineering Workshop**

EE110/PSO	PSO1	PSO2	PSO3
	2	2	2

Course Code	Course Name	L-T-P:C	Year of Introduction
u100	Language lab/CAD Practice/Bridge courses/Micro Projects etc	0-0-2:1	2016

**COURSE END SURVEY - u100 - Language lab/CAD Practice/Bridge courses/Micro Projects etc****CO->PO MAPPING - u100 - Language lab/CAD Practice/Bridge courses/Micro Projects etc**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
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**CO->PSO MAPPING - u100 - Language lab/CAD Practice/Bridge courses/Micro Projects etc**

CO/PSO	PSO1	PSO2	PSO3
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**COURSE->PO MAPPING - u100 - Language lab/CAD Practice/Bridge courses/Micro Projects etc**

u100/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

**COURSE->PSO MAPPING - u100 - Language lab/CAD Practice/Bridge courses/Micro Projects etc**

u100/PSO	PSO1	PSO2	PSO3

**EST100**

Course Code	Course Name	L-T-P:C	Year of Introduction
EST100	ENGINEERING MECHANICS	2-1-0:3	2019

No.	Course Outcome - EST100 - ENGINEERING MECHANICS	Target
CO1	Revise the basic principles of statics and evaluate reactions under equilibrium	55%
CO2	Analyze planar and spatial force systems	55%
CO3	Determine friction under static conditions	55%
CO4	Comprehend the properties of planes and solids	55%
CO5	Identify basic concepts of kinetics and kinematics	55%
CO6	Assess the concept of vibrations	55%

**COURSE END SURVEY - EST100 - ENGINEERING MECHANICS**

Sl.No	Questions & Options
CO1	To what extend you are able to Revise the basic principles of statics and evaluate reactions under equilibrium
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO2	To what extend you are able to analyze planar and spatial force systems
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
	To what extend you are able to determine friction under static conditions

CO3	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO4	To what extend you are able to comprehend the properties of planes and solids
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO5	To what extend you are able to identify basic concepts of kinetics and kinematics
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO6	To what extend you are able to assess the concept of vibration
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>

**CO->PO MAPPING - EST100 - ENGINEERING MECHANICS**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	1		1		1				1	
CO2	3	2			2		1				2	
CO3	3	1	2								1	
CO4	3	3	2		1						2	
CO5	3	2	1		2						1	
CO6	3	3	1								1	

**CO->PSO MAPPING - EST100 - ENGINEERING MECHANICS**

CO/PSO	PSO1	PSO2	PSO3
CO1	3	1	
CO2	3	1	
CO3	3	2	
CO4	2	1	
CO5	3		
CO6	2		

**COURSE->PO MAPPING - EST100 - ENGINEERING MECHANICS**

EST100/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	3	2		2		1				2	

**COURSE->PSO MAPPING - EST100 - ENGINEERING MECHANICS**

EST100/PSO	PSO1	PSO2	PSO3
	3	2	

**EST120**

Course Code	Course Name	L-T-P:C	Year of Introduction
EST120	BASICS OF CIVIL & MECHANICAL ENGINEERING	2-0-0:4	2019

No.	Course Outcome - EST120 - BASICS OF CIVIL & MECHANICAL ENGINEERING	Target
CO1	Discuss the relevance of Civil Engineering, buildings and its codal provisions	65%
CO2	Comprehend the concept of surveying and identify various building materials	65%
CO3	Examine the different components of a building and identify type of construction to be employed	65%
CO4	Compare various cycles involved in different thermodynamic processes	60%
CO5	Analyze different power transmission devices	60%
CO6	Demonstrate working knowledge on manufacturing processes and machining operations	60%

#### COURSE END SURVEY - EST120 - BASICS OF CIVIL & MECHANICAL ENGINEERING

Sl.No	Questions & Options
CO1	to what extend you understood the relevance of civil engineering, buildings and its codal provisions?
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO2	how much you will be able to understand the concept of surveying and identify various building materials?
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO3	to what extend you are able to identify type of construction to be employed and different components of a building?
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO4	how much you are able to compare the cycles involve different thermodynamic process?
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO5	to what extend you are able to analyse power transmission devices?
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO6	to what extend you understand about manufacturing process and machining operations?
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>

#### CO->PO MAPPING - EST120 - BASICS OF CIVIL & MECHANICAL ENGINEERING

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	1	1			2	2	1		1	1	
CO2	1					1	1			1		1
CO3	2	1	1									1
CO4	3		1							1		

CO5		1	1			1			1			
CO6	1		1					1				

**CO->PSO MAPPING - EST120 - BASICS OF CIVIL & MECHANICAL ENGINEERING**

CO/PSO	PSO1	PSO2	PSO3
CO1			
CO2			
CO3			
CO4	2		
CO5	2	1	
CO6	2	1	

**COURSE->PO MAPPING - EST120 - BASICS OF CIVIL & MECHANICAL ENGINEERING**

EST120/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	1	1			2	2	1	1	1	1	1

**COURSE->PSO MAPPING - EST120 - BASICS OF CIVIL & MECHANICAL ENGINEERING**

EST120/PSO	PSO1	PSO2	PSO3
	2	1	

**EST102**

Course Code	Course Name	L-T-P:C	Year of Introduction
EST102	PROGRAMMING IN C	2-1-2:4	2019

No.	Course Outcome - EST102 - PROGRAMMING IN C	Target
CO1	Analyse a computational problem and develop an algorithm/ flow chart to find its solution.	56%
CO2	Develop C programs with branching and looping statements which uses Arithmetic, Logical, Relational or Bitwise operators.	56%
CO3	Develop C programs using arrays, structure and union for storing the data to be processed.	56%
CO4	Divide a given computational problem into a number of modules and develop a readable multi-function C program by using recursion if required, to find the solution to the computational problem.	56%
CO5	Develop C programs which use pointers for array processing and parameter passing	56%
CO6	Develop C programs with files for reading input and storing output.	56%

**COURSE END SURVEY - EST102 - PROGRAMMING IN C**



Sl.No	Questions & Options
CO1	Are you able to analyse a computational problem and develop an algorithm/ flow chart to find its solution?
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO2	Are you able to develop C programs with branching and looping statements which uses Arithmetic , Logical , Relational or Bitwise operators?
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO3	Are you able to develop C programs with arrays , structure or union for storing the data to be processed?
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO4	Are you able to divide a given computational problem into a number of modules and develop a readable multi-function C program by using recursion if required, to find the solution to the computational problem?
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO5	Are you able to develop C programs which use pointers for array processing and parameter passing?
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO6	Are you able to develop C programs with files for reading input and storing output?
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5

**CO->PO MAPPING - EST102 - PROGRAMMING IN C**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	3		2				3		3
CO2	3	3	3	2	3							2
CO3	3	3	3	2	3							2
CO4	3	3	3	3	3					3		3
CO5	3	3			3							2
CO6	3	3			3							2

**CO->PSO MAPPING - EST102 - PROGRAMMING IN C**

CO/PSO	PSO1	PSO2	PSO3
CO1			
CO2			
CO3			
CO4			
CO5			
CO6			

**COURSE->PO MAPPING - EST102 - PROGRAMMING IN C**

EST102/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	3	3	3	3	2				3		3

**COURSE->PSO MAPPING - EST102 - PROGRAMMING IN C**

EST102/PSO	PSO1	PSO2	PSO3

**MAT102**

Course Code	Course Name	L-T-P:C	Year of Introduction
MAT102	VECTOR CALCULUS, DIFFERENTIAL EQUATIONS AND TRANSFORMS	3-1-0:4	2019

No.	Course Outcome - MAT102 - VECTOR CALCULUS, DIFFERENTIAL EQUATIONS AND TRANSFORMS	Target
CO1	Apply the concept of vector functions and learn to work with conservative vector field	60%
CO2	Evaluate surface and volume integrals and study their relationship and applications	60%
CO3	Solve homogeneous and non-homogeneous linear differential equation with constant coefficients	60%
CO4	Use Laplace transform for engineering applications specially for ODEs arising from engineering problems	60%
CO5	Utilize Fourier transforms to solve physical problems arising in engineering	60%

**COURSE END SURVEY - MAT102 - VECTOR CALCULUS, DIFFERENTIAL EQUATIONS AND TRANSFORMS**

Sl.No	Questions & Options
CO1	To what extend are you able to apply the concept of vector functions and learn to work with conservative vector field
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO2	To what extend are you able to evaluate surface and volume integrals and study their relationship and applications
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO3	To what extend are you able to solve homogeneous and non-homogeneous linear differential equation with constant coefficients
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO4	To what extend are you able to use Laplace transform for engineering applications specially for ODEs arising from engineering problems
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>

CO5	To what extend are you able to utilize Fourier transforms to solve physical problems arising in engineering
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>

**CO->PO MAPPING - MAT102 - VECTOR CALCULUS, DIFFERENTIAL EQUATIONS AND TRANSFORMS**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3							1			
CO2	3	3							1			
CO3	3	3							1			
CO4	3	3							1			
CO5	3	3							1			

**CO->PSO MAPPING - MAT102 - VECTOR CALCULUS, DIFFERENTIAL EQUATIONS AND TRANSFORMS**

CO/PSO	PSO1	PSO2	PSO3
CO1			
CO2			
CO3			
CO4			
CO5			

**COURSE->PO MAPPING - MAT102 - VECTOR CALCULUS, DIFFERENTIAL EQUATIONS AND TRANSFORMS**

MAT102/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	3							1			

**COURSE->PSO MAPPING - MAT102 - VECTOR CALCULUS, DIFFERENTIAL EQUATIONS AND TRANSFORMS**

MAT102/PSO	PSO1	PSO2	PSO3

**HUN102**

Course Code	Course Name	L-T-P:C	Year of Introduction
HUN102	PROFESSIONAL COMMUNICATION	2-0-2:4	2019

No.	Course Outcome - HUN102 - PROFESSIONAL COMMUNICATION	Target
CO1	Use vocabulary and language skills relevant to engineering as a profession.	65%
CO2	Analyze, interpret and effectively summarize a variety of textual content.	65%
CO3	Create effective technical presentations	65%

CO4	Discuss a given technical/ non-technical topic in a group setting and arrive at generalizations/consensus.	65%
CO5	Identify drawbacks in listening patterns and apply listening techniques for specific needs.	65%
CO6	Assess and create professional and technical documents that are clear and adhering to all the necessary conventions.	65%

**COURSE END SURVEY - HUN102 - PROFESSIONAL COMMUNICATION**

Sl.No	Questions & Options
CO1	To what extend can you develop and use vocabulary and language skills relevant to engineering profession?
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO2	To what extend can you analyze, interpret and summarize a variety of textual content effectively?
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO3	To what extend can you create effective technical presentations?
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO4	To what extend can you discuss about a given technical/ non- technical topic in a group setting and arrive at a consensus??
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO5	To what extend can you identify drawbacks in listening patterns and apply listening techniques for specific needs?
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO6	To what extend can you assess and create professional and technical documents that are clear and adhering to all the necessary conventions?
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5

**CO->PO MAPPING - HUN102 - PROFESSIONAL COMMUNICATION**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	2	1	1						3		3
CO2		2								3		3
CO3									3	3		
CO4										3		2
CO5		2							3	3		
CO6		2	2	2						3		

**CO->PSO MAPPING - HUN102 - PROFESSIONAL COMMUNICATION**

CO/PSO	PSO1	PSO2	PSO3
CO1			

CO2	1		2
CO3	1		
CO4	3		
CO5			
CO6	3	3	2

**COURSE->PO MAPPING - HUN102 - PROFESSIONAL COMMUNICATION**

HUN102/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	1	2	2	2					3	3		3

**COURSE->PSO MAPPING - HUN102 - PROFESSIONAL COMMUNICATION**

HUN102/PSO	PSO1	PSO2	PSO3
	3	3	2

**ESL120**

Course Code	Course Name	L-T-P:C	Year of Introduction
ESL120	CIVIL & MECHANICAL WORKSHOP	0-0-2:1	2019

No.	Course Outcome - ESL120 - CIVIL & MECHANICAL WORKSHOP	Target
CO1	Apply the modern measuring techniques for linear, area, volume calculations and carry out setting out operations	65%
CO2	Compute the level difference between points	65%
CO3	Co-ordinate the work related to masonry , plumbing, sanitary fittings and design of rain water harvesting systems	65%
CO4	Demonstrate various manufacturing processes in basic mechanical engineering workshops like smithy, carpentry, foundry and fitting	65%
CO5	Demonstrate the operations of various machine tools like lathe, milling, drilling and shaping machines	65%
CO6	Assemble and disassemble machines like IC Engines	65%

**COURSE END SURVEY - ESL120 - CIVIL & MECHANICAL WORKSHOP**

Sl.No	Questions & Options
CO1	To what extent you are able to apply modern measuring techniques for linear, area and volume calculations and carry out setting out operations Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
	To what extent you are able to compute the level difference between points for a civil work

CO2	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO3	To what extent you are able to coordinate the work related to masonry, plumbing, sanitary fittings and design of rain water harvesting system for a residential building construction
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO4	To what extent you are to select smithy, carpentry, foundry and fitting for a particular engineering job
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO5	To what extent you are able to choose the various machine tools like lathe, milling, drilling and shaping machines for your machining requirement
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO6	To what extent you are oable to assemble and disassemble simple machine components
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>

**CO->PO MAPPING - ESL120 - CIVIL & MECHANICAL WORKSHOP**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	3	3	2				2	2		
CO2	2	2	3	3	2				2	2		
CO3	2	2	3	3	2				2	2		
CO4	2	2	3	3	2				2	2		
CO5	2	2	3	3	2				2	2		
CO6	2	2	3	3	2				2	2		

**CO->PSO MAPPING - ESL120 - CIVIL & MECHANICAL WORKSHOP**

CO/PSO	PSO1	PSO2	PSO3
CO1	2		
CO2	2		
CO3	2		
CO4			
CO5			
CO6			

**COURSE->PO MAPPING - ESL120 - CIVIL & MECHANICAL WORKSHOP**

ESL120/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	2	2	3	3	2				2	2		

**COURSE->PSO MAPPING - ESL120 - CIVIL & MECHANICAL WORKSHOP**

ESL120/PSO	PSO1	PSO2	PSO3
	2		

**CYT100**

Course Code	Course Name	L-T-P:C	Year of Introduction
CYT100	ENGINEERING CHEMISTRY	3-1-0:4	2019

No.	Course Outcome - CYT100 - ENGINEERING CHEMISTRY	Target
CO1	Apply the basic concepts of electrochemistry and corrosion to explore its possible applications in various engineering fields	61%
CO2	Understand various spectroscopic techniques like UV-Visible, IR, NMR and its applications.	68%
CO3	Apply the knowledge of analytical method for characterizing a chemical mixture or a compound. Understand the basic concept of SEM for surface characterisation of nanomaterials.	64%
CO4	Learn about the basics of stereochemistry and its application. Apply the knowledge of conducting polymers and advanced polymers in engineering.	67%
CO5	Study various types of water treatment methods to develop skills for treating wastewater	65%

**COURSE END SURVEY - CYT100 - ENGINEERING CHEMISTRY**

Sl.No	Questions & Options
CO1	To what extent you understand the basic concepts of electrochemistry and corrosion to explore its possible applications in various engineering fields?
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO2	To what extent the spectroscopic techniques were found useful for various applications?
	Answer Choice- <i>Extremely helpful/Moderately helpful/ Helpful/A little helpful/Not at all helpful</i>
CO3	How the analytical techniques was found useful for chemical analysis?
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO4	How far you are familiarised to apply the knowledge of polymers for engineering applications?
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO5	Was it helpful for you to apply the knowledge of water treatment methods for societal improvement?
	Answer Choice- <i>Extremely helpful/Moderately helpful/ Helpful/A little helpful/Not at all helpful</i>

**CO->PO MAPPING - CYT100 - ENGINEERING CHEMISTRY**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	2	1									

CO2	1	1		1	2							
CO3	1	1		1	2							
CO4	2	1										
CO5	1			1			3					

**CO->PSO MAPPING - CYT100 - ENGINEERING CHEMISTRY**

CO/PSO	PSO1	PSO2	PSO3
CO1			
CO2			
CO3			
CO4			
CO5			

**COURSE->PO MAPPING - CYT100 - ENGINEERING CHEMISTRY**

CYT100/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	2	2	1	1	2		3					

**COURSE->PSO MAPPING - CYT100 - ENGINEERING CHEMISTRY**

CYT100/PSO	PSO1	PSO2	PSO3

**CYL120**

Course Code	Course Name	L-T-P:C	Year of Introduction
CYL120	ENGINEERING CHEMISTRY LAB	0-0-2:1	2019

No.	Course Outcome - CYL120 - ENGINEERING CHEMISTRY LAB	Target
CO1	Understand and practice different techniques of quantitative chemical analysis to generate experimental skills and apply these skills to various analyses	75%
CO2	Develop skills relevant to synthesize organic polymers and acquire the practical skill to use TLC for the identification of drugs	78%
CO3	Develop the ability to understand and explain the use of modern spectroscopic techniques for analysing and interpreting the IR spectra and NMR spectra of some organic compounds	80%
CO4	Acquire the ability to understand, explain and use instrumental techniques for chemical analysis	77%
CO5	Learn to design and carry out scientific experiments as well as accurately record and analyze the results of such experiments	74%

**COURSE END SURVEY - CYL120 - ENGINEERING CHEMISTRY LAB**



Sl.No	Questions & Options
CO1	To what extent students will be able to apply knowledge about chemical analysis techniques?
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO2	How far students developed their skills in polymer synthesis?
	Answer Choice- <i>Very high degree/High Degree/Moderate degree/Small Degree/Not at all</i>
CO3	To what extent students can apply their knowledge in compound analysis using various spectroscopic techniques?
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO4	How far the students benefited from understanding the concepts of instrumental techniques?
	Answer Choice- <i>Extremely helpful/Moderately helpful/ Helpful/A little helpful/Not at all helpful</i>
CO5	How will you evaluate the skills acquired by doing engineering chemistry experiments?
	Answer Choice- <i>Very high degree/High Degree/Moderate degree/Small Degree/Not at all</i>

**CO->PO MAPPING - CYL120 - ENGINEERING CHEMISTRY LAB**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2		2				3			3
CO2	3				3				3			3
CO3	3				3				3			3
CO4	3				3				3			3
CO5	3				1				3			3

**CO->PSO MAPPING - CYL120 - ENGINEERING CHEMISTRY LAB**

CO/PSO	PSO1	PSO2	PSO3
CO1			
CO2			
CO3			
CO4			
CO5			

**COURSE->PO MAPPING - CYL120 - ENGINEERING CHEMISTRY LAB**

CYL120/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	2	2		3				3			3

**COURSE->PSO MAPPING - CYL120 - ENGINEERING CHEMISTRY LAB**

CYL120/PSO	PSO1	PSO2	PSO3

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**EST110**

Course Code	Course Name	L-T-P:C	Year of Introduction
EST110	ENGINEERING GRAPHICS	2-0-2:3	2019

No.	Course Outcome - EST110 - ENGINEERING GRAPHICS	Target
CO1	Demonstrate Engineering Drawing Standards (as per BIS), dimensioning and preparation of drawings leading to illustration of Graphics as the communication language of Engineers	65%
CO2	Interpret engineering drawings, leading to enhanced presentation skills of 3-D objects in 2-D plane / paper and improved visualization of physical objects.	65%
CO3	Apply the principles of orthographic projections of lines, solids and sectioned views in the design of pipeline systems.	65%
CO4	Prepare isometric and perspective projections that help to reconstruct solutions to real-time engineering problems in 3D to provide better understanding.	65%
CO5	Create surface development of objects which will help to develop suitable models for industrial applications.	65%
CO6	Recognize the importance of CAD software, and develop AutoCAD skills to transfer technical data and sketches into electronic drawing.	65%

**COURSE END SURVEY - EST110 - ENGINEERING GRAPHICS**

Sl.No	Questions & Options
CO1	To what extent you are able to demonstrate Engineering Drawing Standards (as per BIS), dimensioning and preparation of drawings leading to illustration of Graphics as the communication language of Engineers? Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO2	To what extent you are able to interpret engineering drawings, leading to enhanced presentation skills of 3-D objects in 2-D plane / paper and improved visualization of physical objects? Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO3	To what extent you are able to apply the principles of orthographic projections of lines, solids and sectioned views in the design of pipeline systems? Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO4	To what extent you are able to prepare isometric and perspective projections that help to reconstruct solutions to real-time engineering problems in 3D to provide better understanding? Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO5	To what extent you are able to create surface development and generate projections of penetrated objects which will help to develop suitable models for industrial applications? Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>

CO6	To what extent you are able to recognize the importance of CAD software, and develop AutoCAD skills to transfer technical data and sketches into electronic drawing?
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>

**CO->PO MAPPING - EST110 - ENGINEERING GRAPHICS**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	3	2			2		3		3		
CO2	2	3	2	2	2	2		2		3		3
CO3	3	2	2	2				2		3		
CO4	3	2	2	2						3		2
CO5	3	2	2			1				3		2
CO6		3	2	3	2	3				3		3

**CO->PSO MAPPING - EST110 - ENGINEERING GRAPHICS**

CO/PSO	PSO1	PSO2	PSO3
CO1			
CO2			
CO3			
CO4			
CO5			
CO6			

**COURSE->PO MAPPING - EST110 - ENGINEERING GRAPHICS**

EST110/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	3	2	3	2	3		3		3		3

**COURSE->PSO MAPPING - EST110 - ENGINEERING GRAPHICS**

EST110/PSO	PSO1	PSO2	PSO3

**SEMESTER-3****MA201**

Course Code	Course Name	L-T-P:C	Year of Introduction
MA201	Linear Algebra & Complex Analysis	3-1-0:4	2016

No.	Course Outcome - MA201 - Linear Algebra & Complex Analysis	Target
CO1	Identify and study analytic functions and harmonic functions	60%
CO2	Recognize conformal mapping and find regions that are mapped under certain transformations	60%
CO3	Evaluate contour integrals using the theory of complex variables	60%
CO4	Evaluate real definite integrals as an application of residue theorem	60%
CO5	Solve systems of equations	60%
CO6	Compute eigen values and diagonalise a matrix	60%

**COURSE END SURVEY - MA201 - Linear Algebra & Complex Analysis**

Sl.No	Questions & Options
CO1	To what extent are you able to identify and study analytic functions and harmonic functions ?
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO2	To what extent are you able to recognize conformal mapping and find regions that are mapped under certain transformations ?
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO3	To what extent are you able to evaluate contour integrals using the theory of complex variables ?
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO4	To what extent are you able to evaluate real definite integrals as application of residue theorem ?
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO5	To what extent are you able to solve systems of equations ?
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO6	To what extent are you able to compute eigen values and diagonalise a matrix
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>

**CO->PO MAPPING - MA201 - Linear Algebra & Complex Analysis**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2						2			2
CO2	3	3	2						2			2
CO3	3	3	2						2			2
CO4	3	3	2						2			2
CO5	3	3	2						2			2
CO6	3	3	2						2			2

**CO->PSO MAPPING - MA201 - Linear Algebra & Complex Analysis**

CO/PSO	PSO1	PSO2	PSO3
CO1	3		
CO2	3		
CO3	3		
CO4	3		
CO5	3		
CO6	3		

**COURSE->PO MAPPING - MA201 - Linear Algebra & Complex Analysis**

MA201/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	3	2						2			2

**COURSE->PSO MAPPING - MA201 - Linear Algebra & Complex Analysis**

MA201/PSO	PSO1	PSO2	PSO3
	3		

**CE201**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE201	Mechanics of Solids	3-1-0:4	2016

No.	Course Outcome - CE201 - Mechanics of Solids	Target
CO1	Analyze stresses and strains generated in materials due to external loads under various types of loading conditions.	60%
CO2	Construct the shear force and bending moment diagrams of beams under various load combinations.	60%
CO3	Adopt safe design parameters for pressure vessels ,springs and circular shafts based on normal, shear, torsion and bending stresses.	60%
CO4	Perform buckling analysis of long columns to get critical load and stress.	60%
CO5	Analyze deflections of statically determinate beams.	60%

**COURSE END SURVEY - CE201 - Mechanics of Solids**

Sl.No	Questions & Options
CO1	To what extent you are able to analyze stresses and strains generated in materials due to external loads under various types of loading conditions.
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>

CO2	To what extent you are able to construct the shear force and bending moment diagrams of beams under various load combinations.
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO3	To what extent you are able to adopt safe design parameters for pressure vessels ,springs and circular shafts based on normal, shear, torsion and bending stresses.
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO4	To what extent you are able to perform buckling analysis of long columns to get critical load and stress
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO5	To what extent you are able to analyze deflections of statically determinate beams.
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>

**CO->PO MAPPING - CE201 - Mechanics of Solids**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	1								
CO2	3	3	2									
CO3	3	3	3	1								1
CO4	3	3	2									1
CO5	3	3	1	1								

**CO->PSO MAPPING - CE201 - Mechanics of Solids**

CO/PSO	PSO1	PSO2	PSO3
CO1	3	1	
CO2	3	1	
CO3	3	1	
CO4	3	1	
CO5	3	1	

**COURSE->PO MAPPING - CE201 - Mechanics of Solids**

CE201/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	3	3	1								1

**COURSE->PSO MAPPING - CE201 - Mechanics of Solids**

CE201/PSO	PSO1	PSO2	PSO3
	3	1	

**CE203**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE203	Fluid Mechanics– I	3-1-0:4	2016

No.	Course Outcome - CE203 - Fluid Mechanics– I	Target
CO1	Illustrate the basics of properties of fluids and fluid flow at rest and in motion	60%
CO2	Apply the basic equations of fluid flow in flow-through pipes, and different measuring devices such as Venturi Meter, Pitot tube, Notches and Orifice meter	60%
CO3	Analyse flow-through pipes and their major and minor losses	52.5%
CO4	Evaluate the forces on submerged bodies.	54%
CO5	Recognize the characteristics and specialities of boundary layer flow	54.5%

**COURSE END SURVEY - CE203 - Fluid Mechanics– I**

Sl.No	Questions & Options
CO1	To what extent you are able to explain the basics of properties of fluids and fluid flow at rest and in motion
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO2	To what extent you are able to apply the basic equations of fluid flow in flow-through pipes, and different measuring devices such as Venturi Meter, Pitot tube, Notches and Orifice meter
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO3	To what extent you are able to analyse flow-through pipes and their major and minor losses
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO4	To what extent you are able to evaluate the forces on submerged bodies
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO5	To what extent you are able to recognize the characteristics and specialities of boundary layer flow
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5

**CO->PO MAPPING - CE203 - Fluid Mechanics– I**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2							1	2	2
CO2	3	3	2			2				1	2	2
CO3	3	3	3			2				1	2	2
CO4	3	3	1							1	2	2
CO5	3	3	1							1	2	2

**CO->PSO MAPPING - CE203 - Fluid Mechanics– I**

CO/PSO	PSO1	PSO2	PSO3
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CO1	3	2	2
CO2	3	2	2
CO3	3	2	2
CO4	3	2	2
CO5	3	2	2

**COURSE->PO MAPPING - CE203 - Fluid Mechanics– I**

CE203/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	3	3			2				1	2	2

**COURSE->PSO MAPPING - CE203 - Fluid Mechanics– I**

CE203/PSO	PSO1	PSO2	PSO3
	3	2	2

**CE207**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE207	Surveying	3-0-0:3	2016

No.	Course Outcome - CE207 - Surveying	Target
CO1	Identify necessary equipment and decide appropriate methods for surveying as per requirements.	61%
CO2	Perform conventional as well as modern surveying and levelling and perform related calculations	56%
CO3	Develop the land profile and contour maps to compute area, volume and quantity of earth works	56%
CO4	Perform calculations related to triangulation survey	51%
CO5	Apply the theory of errors to identify error sources and apply corrections to measurements.	56%

**COURSE END SURVEY - CE207 - Surveying**

Sl.No	Questions & Options
CO1	TO WHAT EXTENT ARE YOU ABLE TO IDENTIFY THE NECESSARY EQUIPMENT AND DECIDE THE APPROPRIATE METHOD FOR SURVEYING FOR A GIVEN TOPOGRAPHY?
	Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>
CO2	To what extent are you able to Perform conventional as well as modern surveying
	Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>
CO3	To what extent are you able to develop land profile and draw contour maps
	Answer Choice- <i>Strongly Agree/Agree/Neutral Disagree/Strongly disagree</i>



CO4	To what extent are you able to perform triangulation survey
	Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>
CO5	To what extent are you able to identify errors in measurements and apply corrections
	Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>

**CO->PO MAPPING - CE207 - Surveying**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	2	2	2				2		1	
CO2	2	2	2	2	3	2	2		2			2
CO3	3	3	2	2	3	2	2		1		2	2
CO4	3	3	2	2	1				2			1
CO5	3	3	2	2				2				1

**CO->PSO MAPPING - CE207 - Surveying**

CO/PSO	PSO1	PSO2	PSO3
CO1	2	2	
CO2	2	2	
CO3	3		1
CO4	3	2	
CO5	3	2	

**COURSE->PO MAPPING - CE207 - Surveying**

CE207/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	3	2	2	3	2	2	2	2		2	2

**COURSE->PSO MAPPING - CE207 - Surveying**

CE207/PSO	PSO1	PSO2	PSO3
	3	2	1

**CE233**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE233	Surveying Lab	0-0-3:1	2016

No.	Course Outcome - CE233 - Surveying Lab	Target
CO1	Identify and handle various conventional surveying instruments	63%

CO2	Undertake surveying of land using conventional surveying instruments.	63%
CO3	Measure and layout out elevations and relative heights between points.	63%
CO4	Undertake surveying of land using total station.	67%
CO5	Analyze and process data obtained from modern surveying instruments using software	63%

**COURSE END SURVEY - CE233 - Surveying Lab**

Sl.No	Questions & Options
CO1	To what extent you are able to identify and handle various conventional surveying instruments
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO2	To what extent you are able to undertake surveying of land using conventional surveying instruments.
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO3	To what extent you are able to measure and layout out elevations and relative heights between points.
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO4	To what extent you are able to undertake surveying of land using total station.
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO5	To what extent you are able to analyze and process data obtained from modern surveying instruments using software
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>

**CO->PO MAPPING - CE233 - Surveying Lab**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2						1		2	2		
CO2	2	2	1	2					3	2		
CO3	2	2	1	2	1	3	1		3	2		
CO4	2	1	1	3	2	3	1		2	2		1
CO5	2	2	2	2	3				1	2		1

**CO->PSO MAPPING - CE233 - Surveying Lab**

CO/PSO	PSO1	PSO2	PSO3
CO1			3
CO2	2		
CO3	2		
CO4	2		
CO5	2		

**COURSE->PO MAPPING - CE233 - Surveying Lab**

CE233/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	2	2	2	3	3	3	1		3	2		1

**COURSE->PSO MAPPING - CE233 - Surveying Lab**

CE233/PSO	PSO1	PSO2	PSO3
	2		3

**CE231**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE231	Civil Engineering Drafting Lab	0-0-3:1	2016

No.	Course Outcome - CE231 - Civil Engineering Drafting Lab	Target
CO1	Draw various components of buildings	61%
CO2	Prepare building drawings and service plans	61%
CO3	Interpret building drawings	61%
CO4	Apply relevant Government building rules and provisions for construction	61%
CO5	Sketch drawings using drafting software Auto CAD	61%

**COURSE END SURVEY - CE231 - Civil Engineering Drafting Lab**

Sl.No	Questions & Options
CO1	To what extent you are able to draw various components of building
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO2	To what extent you are able to prepare building drawings and service plans
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO3	To what extent you are able to Interpret building drawings
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO4	To what extent you are able to apply relevant Government building rules and provisions for construction
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO5	To what extent you are able to sketch drawings using drafting software Auto CAD
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>

**CO->PO MAPPING - CE231 - Civil Engineering Drafting Lab**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
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CO1	2	2			2					2		
CO2	2	2			2	2		2	2	3		2
CO3	2	2	1		2				2	3		
CO4		2	2		2	3		3	2	3		2
CO5					3				2	2		2

**CO->PSO MAPPING - CE231 - Civil Engineering Drafting Lab**

CO/PSO	PSO1	PSO2	PSO3
CO1	2		
CO2	2	1	3
CO3	2		3
CO4	2	3	2
CO5	2	3	3

**COURSE->PO MAPPING - CE231 - Civil Engineering Drafting Lab**

CE231/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	2	2	2		3	3		3	2	3		2

**COURSE->PSO MAPPING - CE231 - Civil Engineering Drafting Lab**

CE231/PSO	PSO1	PSO2	PSO3
	2	3	3

**CE205**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE205	Engineering Geology	3-0-1:4	2016

No.	Course Outcome - CE205 - Engineering Geology	Target
CO1	Identify natural resources like soils, rocks, minerals and groundwater	55%
CO2	Analyze the geological factors to be considered in construction	55%
CO3	Formulate management strategies and remedial measures to encounter natural hazards	55%
CO4	Analyze factors that determine the stability of earth's surface	55%
CO5	Identify geological structures and predict their impact on engineering works	55%
CO6	Recognise causes of earthquake in relation to internal structure of earth and plate tectonics	55%

**COURSE END SURVEY - CE205 - Engineering Geology**

Sl.No	Questions & Options
CO1	To what extend you are able to Identify natural resources like soils, rocks, minerals and groundwater
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO2	To what extend you are able to Analyze the geological factors to be considered in construction
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO3	To what extend you are able to
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO4	To what extend you are able to Analyze factors that determine the stability of earth's surface
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO5	To what extend you are able to Identify geological structures and predict their impact on engineering works
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO6	To what extend you are able to recognize causes of earthquakes in relation to internal structure of earth and plate tectonics?
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>

**CO->PO MAPPING - CE205 - Engineering Geology**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1						2	1					1
CO2	1		1			2	2			1		
CO3						2	3			1		1
CO4	1						1			1		
CO5	1		1			1	2					
CO6	2		1			1						2

**CO->PSO MAPPING - CE205 - Engineering Geology**

CO/PSO	PSO1	PSO2	PSO3
CO1		1	
CO2	1	1	
CO3		1	
CO4	1	1	
CO5	1	1	
CO6	2	1	

**COURSE->PO MAPPING - CE205 - Engineering Geology**

CE205/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	2		1			2	3			1		2

**COURSE->PSO MAPPING - CE205 - Engineering Geology**

CE205/PSO	PSO1	PSO2	PSO3
	2	1	

**HS210**

Course Code	Course Name	L-T-P:C	Year of Introduction
HS210	Life Skills/Business Economics	2-0-2:3	2016

No.	Course Outcome - HS210 - Life Skills/Business Economics	Target
CO1	comprehend the techniques of language skills in Group Discussion, Presentations, Letter writing and Reports.	60%
CO2	Applies critical and creative thinking to solve problems	60%
CO3	Demonstrates ability to work in groups and teams	60%
CO4	demonstrates the qualities of a professional and is aware of work ethics	60%
CO5	applies the qualities of a leadership in all activities	60%
CO6	applies communication and leadership techniques in all formal environments	60%

**COURSE END SURVEY - HS210 - Life Skills/Business Economics**

Sl.No	Questions & Options
CO1	To what extent can you communicate effectively in formal presentations and in teams
	Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>
CO2	To what extent can you use creativity and critical thinking in solving problems
	Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>
CO3	To what extent can you effectively work in teams and groups
	Answer Choice- <i>Very frequently/Frequently/Rarely Very rarely/Never</i>
CO4	To what extent are you aware of work and professional ethics
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO5	To what extent do you exhibit the qualities of a leader
	Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>
CO6	To what extent can you apply communication and leadership qualities in formal environments

Answer Choice- *Very frequently/Frequently/Rarely Very rarely/Never*

**CO->PO MAPPING - HS210 - Life Skills/Business Economics**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	1	1			2	1		2	1	1	2
CO2				1			1		1	1		2
CO3	1			1		2	1	1	1		1	2
CO4			1	1		2	1	2	1		1	2
CO5	1		1		1	2	1		1	1	1	2
CO6	1	1				2	1	1	2	1		2

**CO->PSO MAPPING - HS210 - Life Skills/Business Economics**

CO/PSO	PSO1	PSO2	PSO3
CO1	1	1	1
CO2	1	1	1
CO3	1	1	1
CO4	1	1	1
CO5	1	1	1
CO6	1	1	1

**COURSE->PO MAPPING - HS210 - Life Skills/Business Economics**

HS210/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	1	1	1	1	1	2	1	2	2	1	1	2

**COURSE->PSO MAPPING - HS210 - Life Skills/Business Economics**

HS210/PSO	PSO1	PSO2	PSO3
	1	1	1

**HS200**

Course Code	Course Name	L-T-P:C	Year of Introduction
HS200	Life Skills/Business Economics	3-0-0:3	2016

No.	Course Outcome - HS200 - Life Skills/Business Economics	Target
CO1	Identify concepts in economics and interpret their role in managerial economics which will be useful in their profession and business.	60%

CO2	Analyze and interpret demand and supply of goods and services in the economy and its influence and execute production analysis.	60%
CO3	Recognize the effect of trade cycle in business and analyze various market situations.	60%
CO4	Measure National Income and evaluate measures taken by RBI in controlling inflation.	60%
CO5	Analyze, compare and justify investment decisions based on capital budgeting methods.	61%
CO6	Prepare and analyze balance sheets, interpret taxation system in India, compare different sources of capital for firms and carry out demand forecast.	62%

**COURSE END SURVEY - HS200 - Life Skills/Business Economics**

Sl.No	Questions & Options
CO1	To what extent are you able to identify concepts in economics and interpret their role in managerial economics which will be useful in their profession and business ? Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>
CO2	To what extent are you able to analyze and interpret demand and supply of goods and services in the economy and its influence and execute production analysis ? Answer Choice- <i>Very advanced/Advanced/Proficient/Basic/ Minimal</i>
CO3	To what extent are you able to recognize the effect of trade cycle in business and analyze various market situations ? Answer Choice- <i>Very advanced/Advanced/Proficient/Basic/ Minimal</i>
CO4	To what extent are you able to measure National Income and evaluate measures taken by RBI in controlling inflation ? Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>
CO5	To what extent are you able to analyze, compare and justify investment decisions based on capital budgeting methods ? Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>
CO6	To what extent are you able to prepare and analyze balance sheets, interpret taxation system in India, compare different sources of capital for firms and carry out demand forecast ? Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>

**CO->PO MAPPING - HS200 - Life Skills/Business Economics**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1												
CO2												
CO3												
CO4												
CO5												



CO6												
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**CO->PSO MAPPING - HS200 - Life Skills/Business Economics**

CO/PSO	PSO1	PSO2	PSO3
CO1			
CO2			
CO3			
CO4			
CO5			
CO6			

**COURSE->PO MAPPING - HS200 - Life Skills/Business Economics**

HS200/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

**COURSE->PSO MAPPING - HS200 - Life Skills/Business Economics**

HS200/PSO	PSO1	PSO2	PSO3

**CET201**

Course Code	Course Name	L-T-P:C	Year of Introduction
CET201	Mechanics of Solids	3-1-0:4	2019

No.	Course Outcome - CET201 - Mechanics of Solids	Target
CO1	Analyse stresses and strains generated in materials due to various types of external loading conditions	62%
CO2	Demonstrate the variation of shear force and bending moment on beams under varying bf load conditions.	62%
CO3	Evaluate stress distributions [direct, flexural, shear and torsional] in pressure vessels and circular shafts.	62%
CO4	Understand the concept of deflection for statically determinate beams	62%
CO5	Analyze the stress variation and failure condition of structural members under axial compressive loads.	62%

**COURSE END SURVEY - CET201 - Mechanics of Solids**

Sl.No	Questions & Options
CO1	To what extent you are able to analyze stresses and strains generated in materials due to external loads under various types of loading conditions.

	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO2	To what extent you are able to demonstrate the variation of S.F. and B.M diagrams of beams under varying load conditions.
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO3	To what extent you are able to apply safe design parameters for pressure vessels, circular shafts based on normal, shear, torsion and bending stresses.
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO4	To what extent you are able to understand the concept of deflection for statically determinate beams
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO5	To what extent you are able to analyze the stress variation and failure condition of structural members under axial compressive loads.
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>

**CO->PO MAPPING - CET201 - Mechanics of Solids**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	1								
CO2	3	3	2									
CO3	3	3	3	1								1
CO4	3	3	1	1								
CO5	3	3	2									1

**CO->PSO MAPPING - CET201 - Mechanics of Solids**

CO/PSO	PSO1	PSO2	PSO3
CO1	3	1	
CO2	3	1	
CO3	3	1	
CO4	3	1	
CO5	3	1	

**COURSE->PO MAPPING - CET201 - Mechanics of Solids**

CET201/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	3	3	1								1

**COURSE->PSO MAPPING - CET201 - Mechanics of Solids**

CET201/PSO	PSO1	PSO2	PSO3
	3	1	

**CET203**

Course Code	Course Name	L-T-P:C	Year of Introduction
CET203	FLUID MECHANICS& HYDRAULICS	3-1-0:4	2019

No.	Course Outcome - CET203 - FLUID MECHANICS& HYDRAULICS	Target
CO1	Recall the relevant principles of hydrostatics and hydraulics of pipes and open channels	60%
CO2	Identify or describe the types, characteristics or properties of fluid flow	60%
CO3	Estimate the fluid pressure, perform the stability check of bodies under hydrostatic condition	61%
CO4	Compute discharge through pipes or estimate the forces on pipe bends by applying hydraulic principles of continuity, energy and/or momentum	61%
CO5	Analyze or compute the flow through open channels, perform the design of prismatic channels	61%

**COURSE END SURVEY - CET203 - FLUID MECHANICS& HYDRAULICS**

Sl.No	Questions & Options
CO1	To what extent are you able to explain the relevant principles of hydrostatics and hydraulics of pipes and open channels
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO2	To what extent are you able to identify or describe the types, characteristics or properties of fluid flow
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO3	To what extent are you able to estimate the fluid pressure, perform the stability check of bodies under hydrostatic condition
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO4	To what extent are you able to compute discharge through pipes or estimate the forces on pipe bends by applying hydraulic principles of continuity, energy and/or momentum
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO5	To what extent are you able to analyze or compute the flow through open channels, perform the design of prismatic channels
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>

**CO->PO MAPPING - CET203 - FLUID MECHANICS& HYDRAULICS**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	2		1							2
CO2	2	2	1									2
CO3	3	3	1		1							

CO4	3	3	2		2							2
CO5	3	3	3		2							2

**CO->PSO MAPPING - CET203 - FLUID MECHANICS& HYDRAULICS**

CO/PSO	PSO1	PSO2	PSO3
CO1	2		
CO2	2		
CO3	2		
CO4	3		
CO5	3		

**COURSE->PO MAPPING - CET203 - FLUID MECHANICS& HYDRAULICS**

CET203/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	3	3		2							2

**COURSE->PSO MAPPING - CET203 - FLUID MECHANICS& HYDRAULICS**

CET203/PSO	PSO1	PSO2	PSO3
	3		

**CET205**

Course Code	Course Name	L-T-P:C	Year of Introduction
CET205	SURVEYING & GEOMATICS	4-0-0:4	2019

No.	Course Outcome - CET205 - SURVEYING & GEOMATICS	Target
CO1	Apply surveying techniques and principles of leveling for the preparation of contour maps, computation of area-volume and sketching mass diagram	64%
CO2	Apply the principles of surveying for triangulation	64%
CO3	Apply different methods of traverse surveying and traverse balancing	64%
CO4	Identify the possible errors in surveying and apply the corrections in field measurements	64%
CO5	Apply the basic knowledge of setting out of different types of curves	64%
CO6	Employ surveying techniques using advanced surveying equipments	64%

**COURSE END SURVEY - CET205 - SURVEYING & GEOMATICS**

Sl.No	Questions & Options
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CO1	To what extend are you capable of applying surveying techniques and principles of leveling for the preparation of contour maps, computation of area-volume and sketching mass diagram
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO2	To what extend are you capable of applying the principles of surveying for triangulation
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO3	To what extend are you capable of applying different methods of traverse surveying and traverse balancing
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO4	To what extend are you capable of identifying the possible errors in surveying and apply the corrections in field measurements
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO5	To what extend are you capable of applying the basic knowledge of setting out of different types of curves
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO6	to what extent are you able to Employ surveying techniques using advanced surveying equipments
	Answer Choice- Excellent/Very Good/Good/Fair/Poor

**CO->PO MAPPING - CET205 - SURVEYING & GEOMATICS**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2	2	1	2		2	1	1	3
CO2	3	3	1	1	3	1		1	3	2	1	3
CO3	3	3	1	1	3	2	1	1	3	2	2	3
CO4	3	3	3	2	3	1	3	2	2	3	3	3
CO5	3	3	1	2	3	1			2	2	2	3
CO6	3	3	1	2	3	2	1	1	2	2	2	3

**CO->PSO MAPPING - CET205 - SURVEYING & GEOMATICS**

CO/PSO	PSO1	PSO2	PSO3
CO1	3	1	2
CO2	3		
CO3	3	2	2
CO4	3	2	2
CO5	3	1	1
CO6	3	1	2

**COURSE->PO MAPPING - CET205 - SURVEYING & GEOMATICS**

CET205/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	3	3	2	3	2	3	2	3	3	3	3

**COURSE->PSO MAPPING - CET205 - SURVEYING & GEOMATICS**

CET205/PSO	PSO1	PSO2	PSO3
	3	2	2

**CEL201**

Course Code	Course Name	L-T-P:C	Year of Introduction
CEL201	CIVIL ENGINEERING PLANNING & DRAFTING LAB	0-0-3:2	2019

No.	Course Outcome - CEL201 - CIVIL ENGINEERING PLANNING & DRAFTING LAB	Target
CO1	Draw various components of buildings	62%
CO2	Prepare building drawings and service plans	62%
CO3	Interpret building drawings	62%
CO4	Apply relevant Government building rules and provisions for construction	62%
CO5	Sketch drawings using drafting software Auto CAD	62%

**COURSE END SURVEY - CEL201 - CIVIL ENGINEERING PLANNING & DRAFTING LAB**

Sl.No	Questions & Options
CO1	To what extent you are able to draw various components of building
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO2	To what extent you are able to prepare building drawings and service plans
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO3	To what extent you are able to Interpret building drawings
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO4	To what extent you are able to apply relevant Government building rules and provisions for construction
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO5	To what extent you are able to sketch drawings using drafting software Auto CAD
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>

**CO->PO MAPPING - CEL201 - CIVIL ENGINEERING PLANNING & DRAFTING LAB**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
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CO1	2				2					3		2
CO2	2	2			2			2	3	3		2
CO3	3	2	2		2			2	2	3		
CO4	2	2	2			3		3		3		2
CO5					3					2		2

**CO->PSO MAPPING - CEL201 - CIVIL ENGINEERING PLANNING &DRAFTING LAB**

CO/PSO	PSO1	PSO2	PSO3
CO1	1		
CO2	1	1	1
CO3	1		
CO4	1	3	2
CO5	1	3	

**COURSE->PO MAPPING - CEL201 - CIVIL ENGINEERING PLANNING &DRAFTING LAB**

CEL201/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	2	2		3	3		3	3	3		2

**COURSE->PSO MAPPING - CEL201 - CIVIL ENGINEERING PLANNING &DRAFTING LAB**

CEL201/PSO	PSO1	PSO2	PSO3
	1	3	2

**MCN201**

Course Code	Course Name	L-T-P:C	Year of Introduction
MCN201	Sustainable Engineering	2-0-0:0	2019

**COURSE END SURVEY - MCN201 - Sustainable Engineering****CO->PO MAPPING - MCN201 - Sustainable Engineering**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
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**CO->PSO MAPPING - MCN201 - Sustainable Engineering**

CO/PSO	PSO1	PSO2	PSO3
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**COURSE->PO MAPPING - MCN201 - Sustainable Engineering**

MCN201/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

**COURSE->PSO MAPPING - MCN201 - Sustainable Engineering**

MCN201/PSO	PSO1	PSO2	PSO3

**MCN201**

Course Code	Course Name	L-T-P:C	Year of Introduction
MCN201	Sustainable Engineering	2-0-0:0	2019

No.	Course Outcome - MCN201 - Sustainable Engineering	Target
CO1	Perceive the relevance and concept of sustainability and associated global initiatives	61%
CO2	Expound on the different types of environmental pollution problems and their sustainable solutions	61%
CO3	Be abreast of environmental regulations and standards	61%
CO4	Outline concepts of conventional and non-conventional energy	61%
CO5	Demonstrate sustainable practices using engineering knowledge	61%

**COURSE END SURVEY - MCN201 - Sustainable Engineering**

Sl.No	Questions & Options
CO1	The Sustainable Development Goals form a road map for the future..
	Answer Choice- <i>Strongly Agree/Agree/Neutral Disagree/Strongly disagree</i>
CO2	Is global warming linked to climate change ?
	Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>
CO3	EIA is a necessary criteria during the course of greenfield projects.
	Answer Choice- <i>Strongly Agree/Agree/Neutral Disagree/Strongly disagree</i>
CO4	Is renewable energy penetrating the global energy market ?
	Answer Choice- <i>Very frequently/Frequently/Rarely Very rarely/Never</i>
CO5	Are sustainable habitats a part of urban life ?
	Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>

**CO->PO MAPPING - MCN201 - Sustainable Engineering**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	1	3	1		1	3				1	1
CO2	1		2			1	3	1	1			1
CO3	1		2		1	1	2	1		2		
CO4	2	2	1			1	2	1		2		



CO5	3		2	1	2	3	2	1	1	1	1	
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**CO->PSO MAPPING - MCN201 - Sustainable Engineering**

CO/PSO	PSO1	PSO2	PSO3
CO1	1	2	1
CO2	1	1	
CO3	1	3	
CO4	1	1	
CO5	1	1	

**COURSE->PO MAPPING - MCN201 - Sustainable Engineering**

MCN201/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	2	3	1	2	3	3	1	1	2	1	1

**COURSE->PSO MAPPING - MCN201 - Sustainable Engineering**

MCN201/PSO	PSO1	PSO2	PSO3
	1	3	1

**CEL203**

Course Code	Course Name	L-T-P:C	Year of Introduction
CEL203	SURVEY LAB	0-0-3:2	2019

No.	Course Outcome - CEL203 - SURVEY LAB	Target
CO1	Identify and handle various conventional surveying instruments	62%
CO2	Apply levelling principles in field and measure elevations and relative heights between points.	62%
CO3	Solve triangulation problems using theodolite	62%
CO4	Undertake surveying of land using total station	62%
CO5	Analyze and process data obtained from modern surveying instruments using software	62%

**COURSE END SURVEY - CEL203 - SURVEY LAB**

Sl.No	Questions & Options
CO1	To what extent the student is able to identify and handle various conventional surveying instruments
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>

CO2	To what extent the student is able to apply levelling principles in field and measure elevations and relative heights between points
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO3	To what extent the student is able to solve triangulation problems using theodolite
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO4	To what extent the student is able to undertake surveying of land using total station
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO5	To what extent the student is able to analyze and process data obtained from modern surveying instruments using software
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>

**CO->PO MAPPING - CEL203 - SURVEY LAB**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	1							2	2		
CO2	3	2	3		3	2			3	3		2
CO3	3	2	2						3	2		2
CO4	3	2	3		3	2			3	2		2
CO5	3	2	2		3				3	2		2

**CO->PSO MAPPING - CEL203 - SURVEY LAB**

CO/PSO	PSO1	PSO2	PSO3
CO1	3		
CO2	3	2	2
CO3	3	2	1
CO4	3	2	2
CO5	3	2	2

**COURSE->PO MAPPING - CEL203 - SURVEY LAB**

CEL203/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	2	3		3	2			3	3		2

**COURSE->PSO MAPPING - CEL203 - SURVEY LAB**

CEL203/PSO	PSO1	PSO2	PSO3
	3	2	2

**MAT201**

Course Code	Course Name	L-T-P:C	Year of Introduction
MAT201	PARTIAL DIFFERENTIAL EQUATION AND COMPLEX ANALYSIS	3-1-0:4	2019

No.	Course Outcome - MAT201 - PARTIAL DIFFERENTIAL EQUATION AND COMPLEX ANALYSIS	Target
CO1	Solve partial differential equations	60%
CO2	Analyse solutions of one dimensional wave and heat equations	60%
CO3	Understand the important concepts of a complex valued functions like continuity, differentiability and conformal mappings.	60%
CO4	Evaluate complex integrals using Cauchy's integral theorem and Cauchy's integral formula	60%
CO5	Formulate the series expansion of complex function about a singularity and apply residue theorem to compute several kinds of real integrals.	60%

**COURSE END SURVEY - MAT201 - PARTIAL DIFFERENTIAL EQUATION AND COMPLEX ANALYSIS**

Sl.No	Questions & Options
CO1	To what extent are you able to solve partial differential equations?
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO2	To what extent are you able to analyse solutions of one dimensional wave and heat equations
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO3	To what extent are you able to understand the important concepts of a complex valued functions like continuity, differentiability and conformal mappings.
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO4	To what extent are you able to evaluate complex integrals using Cauchy's integral theorem and Cauchy's integral formula
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO5	To what extent are you able to formulate the series expansion of complex function about a singularity and apply residue theorem to compute several kinds of real integrals.
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>

**CO->PO MAPPING - MAT201 - PARTIAL DIFFERENTIAL EQUATION AND COMPLEX ANALYSIS**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2									
CO2	3	3	2									
CO3	3	3	2									
CO4	3	3	2									
CO5	3	3	2									

**CO->PSO MAPPING - MAT201 - PARTIAL DIFFERENTIAL EQUATION AND COMPLEX ANALYSIS**

CO/PSO	PSO1	PSO2	PSO3
CO1	3		
CO2	3		
CO3	3		
CO4	3		
CO5	3		

**COURSE->PO MAPPING - MAT201 - PARTIAL DIFFERENTIAL EQUATION AND COMPLEX ANALYSIS**

MAT201/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	3	2									

**COURSE->PSO MAPPING - MAT201 - PARTIAL DIFFERENTIAL EQUATION AND COMPLEX ANALYSIS**

MAT201/PSO	PSO1	PSO2	PSO3
	3		

**HUT200**

Course Code	Course Name	L-T-P:C	Year of Introduction
HUT200	PROFESSIONAL ETHICS	2-0-0:2	2019

No.	Course Outcome - HUT200 - PROFESSIONAL ETHICS	Target
CO1	Understand the core values that shape the ethical behavior of a professional(UNDERSTANDING)	60%
CO2	Adopt a good character and follow an ethical life(REMEMBERING)	60%
CO3	Explain the role and responsibility in technological development by keeping personal ethics and legal ethic(ANALYSING)	60%
CO4	Solve moral and ethical problems through exploration and assessment by established experiments(APPLYING)	60%
CO5	Apply the knowledge of human values and social values to contemporary ethical values and global issues.(EVALUATING)	60%

**COURSE END SURVEY - HUT200 - PROFESSIONAL ETHICS**

Sl.No	Questions & Options
CO1	I am able to understand and identify core values required in professional life
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO2	I am able to develop moral values and ethics

	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO3	I am able to understand the roles and responsibilities of a professional
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO4	I am able to analyse and solve moral and ethical problems
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO5	I am able to judge a case or global issue
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5

**CO->PO MAPPING - HUT200 - PROFESSIONAL ETHICS**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1						3		3	2	3	2
CO2			1	1					3		1	
CO3		1						1	1	1	3	
CO4					1		1			2	3	
CO5						1					3	1

**CO->PSO MAPPING - HUT200 - PROFESSIONAL ETHICS**

CO/PSO	PSO1	PSO2	PSO3
CO1			3
CO2	2		3
CO3		3	3
CO4		2	
CO5			

**COURSE->PO MAPPING - HUT200 - PROFESSIONAL ETHICS**

HUT200/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	1	1	1	1	1	1	3	1	3	2	3	2

**COURSE->PSO MAPPING - HUT200 - PROFESSIONAL ETHICS**

HUT200/PSO	PSO1	PSO2	PSO3
	2	3	3

**SEMESTER-4****MA202**

Course Code	Course Name	L-T-P:C	Year of Introduction
MA202	Probability Distributions, Transforms and Numerical Methods	3-1-0:4	2016

No.	Course Outcome - MA202 - Probability Distributions, Transforms and Numerical Methods	Target
CO1	Apply the concept of random variables, probability distributions, specific discrete distributions in various Engineering problems.	62%
CO2	Utilize specific continuous distributions in various Engineering problems.	65%
CO3	Use Laplace transforms for engineering applications.	65%
CO4	Implement Fourier transforms for engineering applications.	65%
CO5	Solve various engineering problems using numerical methods for solution of equations and interpolation.	65%
CO6	Employ numerical methods for integration, differentiation and solution of differential equations	65%

**COURSE END SURVEY - MA202 - Probability Distributions, Transforms and Numerical Methods**

Sl.No	Questions & Options
CO1	To what extent are you able to apply the concept of random variables, probability distributions, specific discrete distributions in various Engineering problems ?
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO2	To what extent are you able to utilize specific continuous distributions in various Engineering problems?
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO3	To what extent are you able to use Laplace transforms for engineering applications?
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO4	To what extent are you able to implement Fourier transforms for engineering applications.?
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO5	To what extent are you able to solve various engineering problems using numerical methods for solution of equations and interpolation?
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO6	To what extent are you able to employ numerical methods for integration, differentiation and solution of differential equations?
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>

**CO->PO MAPPING - MA202 - Probability Distributions, Transforms and Numerical Methods**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2						1			2
CO2	3	3	2						1			2

CO3	3	3	2						1			2
CO4	3	3	2						1			2
CO5	3	3	2						1			2
CO6	3	3	2						1			2

**CO->PSO MAPPING - MA202 - Probability Distributions, Transforms and Numerical Methods**

CO/PSO	PSO1	PSO2	PSO3
CO1	3	2	
CO2	3	2	
CO3	3	2	
CO4	3	2	
CO5	3	2	
CO6	3	2	

**COURSE->PO MAPPING - MA202 - Probability Distributions, Transforms and Numerical Methods**

MA202/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	3	2						1			2

**COURSE->PSO MAPPING - MA202 - Probability Distributions, Transforms and Numerical Methods**

MA202/PSO	PSO1	PSO2	PSO3
	3	2	

**CE202**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE202	Structural Analysis- I	3-1-0:4	2016

No.	Course Outcome - CE202 - Structural Analysis- I	Target
CO1	Analyze trusses and determine internal axial forces	61%
CO2	Infer displacement response of statically determinate structures using energy methods, virtual work methods	58%
CO3	Analyze statically indeterminate structures using strain energy method and method of consistent deformation	54%
CO4	Construct influence lines to evaluate the effect of moving loads on statically determinate structures	62%
CO5	Analyze statically determinate arches, suspension bridges and cables	58%

**COURSE END SURVEY - CE202 - Structural Analysis- I**

Sl.No	Questions & Options
CO1	To what extent you are able to analyse determinate trusses?
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO2	To what extent you are able to find displacement response of statically determinate structures by energy methods and virtual work methods?
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO3	To what extent you are able to Analyze statically indeterminate structures using strain energy method and method of consistent deformation?
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO4	To what extent you are able to analyse moving loads on statically determinate structures using influence lines?
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO5	To what extent you are able to analyze statically determinate arches, suspension bridges and cables?
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>

**CO->PO MAPPING - CE202 - Structural Analysis- I**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3							2		2
CO2	3	3	3							2		2
CO3	3	3	3							2		2
CO4	3	3	3							2		2
CO5	3	3	3							2		2

**CO->PSO MAPPING - CE202 - Structural Analysis- I**

CO/PSO	PSO1	PSO2	PSO3
CO1	3		1
CO2	3		1
CO3	3		1
CO4	3		1
CO5	3		1

**COURSE->PO MAPPING - CE202 - Structural Analysis- I**

CE202/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	3	3							2		2

**COURSE->PSO MAPPING - CE202 - Structural Analysis- I**



CE202/PSO	PSO1	PSO2	PSO3
	3		1

**CE204**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE204	Construction Technology	4-0-0:4	2016

No.	Course Outcome - CE204 - Construction Technology	Target
CO1	Understand the building materials, their components and manufacturing processes	61%
CO2	Identify the properties of concrete and to formulate concrete mix design	61%
CO3	Recognize necessary details regarding the construction of building components	62%
CO4	Analyse and apply learning of materials, structures, servicing and construction of masonry domestic buildings	52%
CO5	Define and describe the concepts and design criteria of tall framed and load bearing buildings	56%
CO6	Analyse the reasons for failure of civil engineering structures and suggest solutions	56%

**COURSE END SURVEY - CE204 - Construction Technology**

Sl.No	Questions & Options
CO1	To what extent you are able to analyse different construction materials and construct masonry and concrete buildings and its components economically
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO2	To what extent you are able to identify properties of concrete and formulate mix design
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO3	To what extent you are able to recognize details regarding the construction of building components
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO4	To what extent you are able to analyse materials, structures, servicing and construction of masonry buildings
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO5	To what extent you are able to describe the concepts and design criteria of tall framed and load bearing buildings
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO6	To what extent you are able to analyse the reasons for failure of civil engineering structures and suggest solutions
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>

**CO->PO MAPPING - CE204 - Construction Technology**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	1				2	1			2	2	1
CO2	2	2				2				2	2	1
CO3						2	1				2	3
CO4	2	2	1	1		2	1				1	1
CO5	2					2						
CO6	2	1	1			2						

**CO->PSO MAPPING - CE204 - Construction Technology**

CO/PSO	PSO1	PSO2	PSO3
CO1	1	2	1
CO2	2		1
CO3	1	2	
CO4	1	2	
CO5	1	2	
CO6	1	1	

**COURSE->PO MAPPING - CE204 - Construction Technology**

CE204/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	2	2	1	1		2	1			2	2	3

**COURSE->PSO MAPPING - CE204 - Construction Technology**

CE204/PSO	PSO1	PSO2	PSO3
	2	2	1

**CE206**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE206	Fluid Mechanics-II	3-0-0:3	2016

No.	Course Outcome - CE206 - Fluid Mechanics-II	Target
CO1	Use fundamental theories of fluid mechanics for the analysis of hydraulic machines	61%
CO2	Design components of turbines and pumps and study their characteristics	61%
CO3	Develop open channel flow equations from the basic principles and laws of fluid mechanics	60%

CO4	Apply dimensional analysis principle for problems in fluid mechanics	60%
CO5	Recognize and apply basic modeling laws in fluid mechanics to solve problems	60%

**COURSE END SURVEY - CE206 - Fluid Mechanics-II**

Sl.No	Questions & Options
CO1	To what extent you are able to use fundamental theories of fluid mechanics for the analysis of hydraulic machines
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO2	To what extent you are able to design the components of turbines and pumps and analyse their properties
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO3	To what extent you are able to design the open channel flow equation using basic principles of fluid mechanics
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO4	To what extent you are able to apply dimensional analysis principle for fluid mechanics
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO5	To what extent you are able to use basic modelling laws for solving fluid mechanics problems
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>

**CO->PO MAPPING - CE206 - Fluid Mechanics-II**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2		2					2	2
CO2	3	3	2	2		2					2	2
CO3	3	3	3	3		2					2	2
CO4	3	3	2	1							2	2
CO5	3	3	2	1		2					2	2

**CO->PSO MAPPING - CE206 - Fluid Mechanics-II**

CO/PSO	PSO1	PSO2	PSO3
CO1	3	1	2
CO2	3	2	2
CO3	3	2	2
CO4	3	1	2
CO5	3	2	2

**COURSE->PO MAPPING - CE206 - Fluid Mechanics-II**

CE206/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	3	3	3		2					2	2

**COURSE->PSO MAPPING - CE206 - Fluid Mechanics-II**

CE206/PSO	PSO1	PSO2	PSO3
	3	2	2

**CE208**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE208	Geotechnical Engineering-I	3-0-0:3	2016

No.	Course Outcome - CE208 - Geotechnical Engineering-I	Target
CO1	Determine physical and index properties of soil and classify soils based on standard geotechnical engineering practice	62%
CO2	Discuss the IS laboratory test procedures used for determination of index and engineering properties of soils	62%
CO3	Estimate and predict the stress-strain behavior of soils subjected to different states of saturation	62%
CO4	Interpret the shear strength parameters of soil and utilize them for tackling real life problems encountered at site.	62%
CO5	Analyse compressibility of soils under static and dynamic loading conditions.	62%

**COURSE END SURVEY - CE208 - Geotechnical Engineering-I**

Sl.No	Questions & Options
CO1	To what extent you are able to determine the physical and index properties of soil and classify soils based on standard geotechnical engineering practice
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO2	To what extent you can recognize the IS laboratory test procedures used for determination of index and engineering properties of soils
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO3	To what extent you can estimate and predict the stress-strain behavior of soils subjected to different states of saturation
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO4	To what extent you can interpret the shear strength parameters of soil and utilize them for tackling real life problems encountered at site.
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5

CO5	To what extent you are able to demonstrate the compressional properties of soils under static and dynamic loading conditions.
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5

**CO->PO MAPPING - CE208 - Geotechnical Engineering-I**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	1									2
CO2	3	1										2
CO3	3	2	1			2						2
CO4	3	2	1			2						2
CO5	3	2	1			2						2

**CO->PSO MAPPING - CE208 - Geotechnical Engineering-I**

CO/PSO	PSO1	PSO2	PSO3
CO1	3		
CO2	2	1	
CO3	3	1	
CO4	3	1	
CO5	3	1	

**COURSE->PO MAPPING - CE208 - Geotechnical Engineering-I**

CE208/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	2	1			2						2

**COURSE->PSO MAPPING - CE208 - Geotechnical Engineering-I**

CE208/PSO	PSO1	PSO2	PSO3
	3	1	

**CE232**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE232	Materials Testing Lab I	0-0-3:1	2016

No.	Course Outcome - CE232 - Materials Testing Lab I	Target
CO1	Identify the basic mechanical properties of mild steel and the relevant testing equipment	81%
CO2	Measure rigidity modulus and stiffness under different loading conditions	81%

CO3	Evaluate the ultimate shear strength of a material.	81%
CO4	Measure the Youngs modulus, deflection and maximum bending stress and justify Clark Maxwell theorem	81%
CO5	Analyse the behaviour of a material under impact loading.	81%
CO6	Evaluate the hardness of a material	81%

**COURSE END SURVEY - CE232 - Materials Testing Lab I**

Sl.No	Questions & Options
CO1	To what extend are you able to Identify the basic mechanical properties of mild steel and the relevant testing equipment
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO2	To what extend are you able to measure rigidity modulus and stiffness under different loading conditions
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO3	To what extend are you able to evaluate the ultimate shear strength of a material.
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO4	To what extend are you able to measure the Youngs modulus, deflection and maximum bending stress and justify Clark Maxwell theorem
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO5	To what extend are you able to analyse the behaviour of a material under impact loading.
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO6	To what extend are you able to evaluate the hardness of a material
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>

**CO->PO MAPPING - CE232 - Materials Testing Lab I**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	1	2	2		2		1	1	2		
CO2	3	1	2	2		2		1	2	2		
CO3	3	1	2	2		2		1	2	2		3
CO4	3	1	2	2		2		1	2	2		3
CO5	3	1	2	2		2		1	2	2		2
CO6	3	1	2	2		2		1	2	2		2

**CO->PSO MAPPING - CE232 - Materials Testing Lab I**

CO/PSO	PSO1	PSO2	PSO3
CO1	3	2	

CO2	3	2	
CO3	3	1	
CO4	3	1	
CO5	3	1	
CO6	3	2	

**COURSE->PO MAPPING - CE232 - Materials Testing Lab I**

CE232/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	1	2	2		2		1	2	2		3

**COURSE->PSO MAPPING - CE232 - Materials Testing Lab I**

CE232/PSO	PSO1	PSO2	PSO3
	3	2	

**CE234**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE234	Fluid Mechanics Lab	0-0-3:1	2016

No.	Course Outcome - CE234 - Fluid Mechanics Lab	Target
CO1	Demonstrate Bernoulli equation and its application to measurement of flow using different equipments	60%
CO2	Demonstrate the stability of floating bodies	60%
CO3	Demonstrate the working of different types of valves and identify the losses involved in pipe flow	60%
CO4	Identify an appropriate pump for any given application/situation and estimate its efficiency.	55%
CO5	Identify an appropriate turbine for any application and estimate its efficiency under different loads and speed conditions.	55%

**COURSE END SURVEY - CE234 - Fluid Mechanics Lab**

Sl.No	Questions & Options
CO1	To what extent you are able to demonstrate Bernoulli equation and its application to measurement of flow using different equipments
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO2	To what extent you are able to demonstrate the stability of floating bodies
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>

CO3	To what extent you are able to demonstrate the working of different types of valves and identify the losses involved in pipe flow
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO4	To what extent you are able to identify an appropriate pump for any given application/situation and estimate its efficiency.
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO5	To what extent you are able to identify an appropriate turbine for any application and estimate its efficiency under different loads and speed conditions.
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>

**CO->PO MAPPING - CE234 - Fluid Mechanics Lab**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2						2	2		2
CO2	3	2	2	2	2				2	2		2
CO3	3	2	2						2	2		2
CO4	3	2	2	2		2	1		2	2		2
CO5	3	2	2	2	1	2	1		2	2		2

**CO->PSO MAPPING - CE234 - Fluid Mechanics Lab**

CO/PSO	PSO1	PSO2	PSO3
CO1	2		
CO2	2	2	
CO3	2		
CO4			2
CO5	2	2	

**COURSE->PO MAPPING - CE234 - Fluid Mechanics Lab**

CE234/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	2	2	2	2	2	1		2	2		2

**COURSE->PSO MAPPING - CE234 - Fluid Mechanics Lab**

CE234/PSO	PSO1	PSO2	PSO3
	2	2	2

HS200



Course Code	Course Name	L-T-P:C	Year of Introduction
HS200	Life Skills/Business Economics	3-0-0:3	2016

No.	Course Outcome - HS200 - Life Skills/Business Economics	Target
CO1	Identify concepts in economics and interpret their role in managerial economics which will be useful in their profession and business.	66%
CO2	Analyze and interpret demand and supply of goods and services in the economy and its influence and execute production analysis.	62%
CO3	Recognize the effect of trade cycle in business and analyze various market situations.	61%
CO4	Measure National Income and evaluate measures taken by RBI in controlling inflation.	61%
CO5	Analyze, compare and justify investment decisions based on capital budgeting methods.	61%
CO6	Prepare and analyze balance sheets, interpret taxation system in India, compare different sources of capital for firms and carry out demand forecast.	61%

**COURSE END SURVEY - HS200 - Life Skills/Business Economics**

Sl.No	Questions & Options
CO1	To what extent you are able to identify concepts in Economics & interpret their role in Managerial Economics Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>
CO2	To what extent you are able to analyse & interpret determinants of demand & supply & the factors which leads to changes in demand & supply of goods & services in the economy. Answer Choice- <i>Very frequently/Frequently/Rarely Very rarely/Never</i>
CO3	To what extent you are able to recognise the effect of trade cycle in business Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO4	To what extent you are able to evaluate the effect of the measures taken by RBI in controlling inflation Answer Choice- <i>Very high degree/High Degree/Moderate degree/Small Degree/Not at all</i>
CO5	To what extent you are able to compare & justify investment decisions based on capital budgeting methods Answer Choice- <i>Very high degree/High Degree/Moderate degree/Small Degree/Not at all</i>
CO6	To what extent you are able to prepare balance sheet,interpret GST& compare the different sources of finance for firms Answer Choice- <i>Very frequently/Frequently/Rarely Very rarely/Never</i>

**CO->PO MAPPING - HS200 - Life Skills/Business Economics**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	1	1			2	1		2	1	1	2
CO2				1			1		1	1		2

CO3	1			1		2	1	1	1		1	2
CO4			1	1		2	1	2	1		1	2
CO5	1		1		1	2	1		1	1	1	2
CO6	1	1				2	1	1	2	1		2

**CO->PSO MAPPING - HS200 - Life Skills/Business Economics**

CO/PSO	PSO1				PSO2				PSO3			
CO1	1				1				1			
CO2	1				1				1			
CO3	1				1				1			
CO4	1				1				1			
CO5	1				1				1			
CO6	1				1				1			

**COURSE->PO MAPPING - HS200 - Life Skills/Business Economics**

HS200/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	1	1	1	1	1	2	1	2	2	1	1	2

**COURSE->PSO MAPPING - HS200 - Life Skills/Business Economics**

HS200/PSO	PSO1				PSO2				PSO3			
	1				1				1			

**MAT202**

Course Code	Course Name	L-T-P:C	Year of Introduction
MAT202	Probability, Statistics and Numerical Methods	3-1-0:4	2019

No.	Course Outcome - MAT202 - Probability, Statistics and Numerical Methods	Target
CO1	Understand the concept, properties and important models of discrete random variables and, using them analyse suitable random phenomena	55%
CO2	Understand the concept, properties and important models of continuous random variables and, using them, analyse suitable random phenomena.	55%
CO3	Perform statistical inferences concerning characteristics of a population based on attributes of samples drawn from the population	57%
CO4	Compute roots of equations, evaluate definite integrals and perform interpolation on given numerical data using standard numerical techniques	60%

CO5	Apply standard numerical techniques for solving systems of equations, fitting curves on given numerical data and solving ordinary differential equations.	60%
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**COURSE END SURVEY - MAT202 - Probability, Statistics and Numerical Methods**

Sl.No	Questions & Options
CO1	How far this course has helped you to understand the concept, properties and important models of discrete random variables and, using them analyse suitable random phenomena
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO2	How far this course has helped you to understand the concept, properties and important models of continuous random variables and, using them, analyse suitable random phenomena.
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO3	How far this course has helped you to perform statistical inferences concerning characteristics of a population based on attributes of samples drawn from the population
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO4	How far this course has helped you to compute roots of equations, evaluate definite integrals and perform interpolation on given numerical data using standard numerical techniques
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO5	How far this course has helped you to apply standard numerical techniques for solving systems of equations, fitting curves on given numerical data and solving ordinary differential equations.
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>

**CO->PO MAPPING - MAT202 - Probability, Statistics and Numerical Methods**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2										1
CO2	3	2										1
CO3	3	2		2								1
CO4	3	2										1
CO5	3	2										1

**CO->PSO MAPPING - MAT202 - Probability, Statistics and Numerical Methods**

CO/PSO	PSO1	PSO2	PSO3
CO1	2		
CO2	2		
CO3	2		
CO4	2		
CO5	2		

**COURSE->PO MAPPING - MAT202 - Probability, Statistics and Numerical Methods**

MAT202/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	2		2								1

**COURSE->PSO MAPPING - MAT202 - Probability, Statistics and Numerical Methods**

MAT202/PSO	PSO1	PSO2	PSO3
	2		

**CET202**

Course Code	Course Name	L-T-P:C	Year of Introduction
CET202	ENGINEERING GEOLOGY	3-0-1:4	2019

No.	Course Outcome - CET202 - ENGINEERING GEOLOGY	Target
CO1	Recall the fundamental concepts of surface processes, subsurface process, minerals, rocks, groundwater and geological factors in civil engineering constructions.	70%
CO2	Identify and describe the surface processes, subsurface process, earth materials, groundwater and geological factors in civil engineering constructions.	70%
CO3	Apply the basic concepts of surface and subsurface processes, minerals, rocks, groundwater and geological characteristics in civil engineering constructions.	70%
CO4	Analyze and classify geological processes, earth materials and groundwater	70%
CO5	Evaluation of geological factors in civil engineering constructions.	70%

**COURSE END SURVEY - CET202 - ENGINEERING GEOLOGY**

Sl.No	Questions & Options
CO1	To what extent you are able to Recall the fundamental concepts of surface processes, subsurface process, minerals, rocks, groundwater and geological factors in civil engineering constructions.
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO2	To what extent you are able to Identify and describe the surface processes, subsurface process, earth materials, groundwater and geological factors in civil engineering constructions.
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO3	To what extent you are able to Apply the basic concepts of surface and subsurface processes, minerals, rocks, groundwater and geological characteristics in civil engineering constructions.
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO4	To what extent you are able to Analyze and classify geological processes, earth materials and groundwater
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO5	To what extent you are able to Evaluate the geological factors in civil engineering constructions.

Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5

**CO->PO MAPPING - CET202 - ENGINEERING GEOLOGY**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2					1	2					
CO2	3											
CO3	3											
CO4	3	2										
CO5	3	1	3			3	3	2				2

**CO->PSO MAPPING - CET202 - ENGINEERING GEOLOGY**

CO/PSO	PSO1	PSO2	PSO3
CO1			
CO2			
CO3			
CO4			
CO5			

**COURSE->PO MAPPING - CET202 - ENGINEERING GEOLOGY**

CET202/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	2	3			3	3	2				2

**COURSE->PSO MAPPING - CET202 - ENGINEERING GEOLOGY**

CET202/PSO	PSO1	PSO2	PSO3

**CET204**

Course Code	Course Name	L-T-P:C	Year of Introduction
CET204	GEOTECHNICAL ENGINEERING – I	4-0-0:4	2019

No.	Course Outcome - CET204 - GEOTECHNICAL ENGINEERING – I	Target
CO1	Explain the fundamental concepts of basic and engineering properties of soil	62%
CO2	Describe the laboratory testing methods for determining soil parameters	65%
CO3	Solve the basic properties of soil by applying functional relationships	65%
CO4	Calculate the engineering properties of soil by applying the laboratory test results and the fundamental concepts of soil mechanics	65%

CO5	Analyze the soil properties to identify and classify the soil	65%
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**COURSE END SURVEY - CET204 - GEOTECHNICAL ENGINEERING – I**

Sl.No	Questions & Options
CO1	To what extend did you understand the fundamental concepts of basic and engineering properties of soil
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO2	To what extend you were able to learn the laboratory testing methods for determining soil parameters
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO3	To what extend are you able to solve the basic properties of soil by applying functional relationships
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO4	To what extend are you able to calculate the engineering properties of soil by applying the laboratory test results and the fundamental concepts of soil mechanics
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO5	To what extend are you able to analyze the soil properties to identify and classify the soil
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5

**CO->PO MAPPING - CET204 - GEOTECHNICAL ENGINEERING – I**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3		2						2	2	3
CO2	3	3		3					2	2	2	1
CO3	3	3		2					1	1	2	3
CO4	3	3		1		1			2	2	2	2
CO5	3	3		2					2	2	2	2

**CO->PSO MAPPING - CET204 - GEOTECHNICAL ENGINEERING – I**

CO/PSO	PSO1	PSO2	PSO3
CO1	3		
CO2	3	2	2
CO3	3		
CO4	3	2	2
CO5	3	1	1

**COURSE->PO MAPPING - CET204 - GEOTECHNICAL ENGINEERING – I**

CET204/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	3		3		1			2	2	2	3

**COURSE->PSO MAPPING - CET204 - GEOTECHNICAL ENGINEERING – I**

CET204/PSO	PSO1	PSO2	PSO3
	3	2	2

**CET206**

Course Code	Course Name	L-T-P:C	Year of Introduction
CET206	TRANSPORTATION ENGINEERING	4-0-0:4	2019

No.	Course Outcome - CET206 - TRANSPORTATION ENGINEERING	Target
CO1	Apply the basic principles of Highway planning and design highway geometric elements	50%
CO2	Apply standard code specifications in judging the quality of highway materials; designing of flexible pavements	50%
CO3	Explain phenomena in road traffic by collection, analysis and interpretation of traffic data through surveys; creative design of traffic control facilities	50%
CO4	Understand about railway systems, tunnel, harbour and docks	50%
CO5	Express basics of airport engineering and design airport elements	50%

**COURSE END SURVEY - CET206 - TRANSPORTATION ENGINEERING**

Sl.No	Questions & Options
CO1	While aligning a highway in a built up area, it was necessary to provide a horizontal curve of radius 300 m for a design speed 65Km/hr, length of wheel base-6m and pavement width 10.5m. Assume rate of introduction of super elevation as 1 in 100 and super elevation is provided by rotating about centre line. Design super elevation, extra widening of pavement and length of transition curve.
	Answer Choice- <i>Very advanced/Advanced/Proficient/Basic/ Minimal</i>
CO2	Design a flexible pavement for two lane single carriage way for present traffic 1200 commercial vehicles per day, period of construction= 3 yrs, annual traffic growth = 7.5%, Design CBR = 7%, Design life = 15 yrs. Use IRC method.
	Answer Choice- <i>Very advanced/Advanced/Proficient/Basic/ Minimal</i>
CO3	Traffic in a congested multilane highway lane is observed to have an average spacing of 200 ft, and an average headway of 3.8s. Estimate the rate of flow, density and speed of traffic in this lane.
	Answer Choice- <i>Very advanced/Advanced/Proficient/Basic/ Minimal</i>
CO4	Sketch the component parts of a permanent way and mark the salient points
	Answer Choice- <i>Very high degree/High Degree/Moderate degree/Small Degree/Not at all</i>
CO5	The total length of a runway is 1000 m. The elevation at distance 0,200 m, 400 m, 600 m, 800 m and 1000 m are 100.0 m, 99.2 m, 101.0 m, 101.8 m, 101.4 m and 101.0 m respectively. What will be the effective gradient of runway?
	Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>

**CO->PO MAPPING - CET206 - TRANSPORTATION ENGINEERING**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	1		1	3	1		2		1
CO2	3	1	3	1		1	1	1		1		1
CO3	3	2	2	1					1	2		2
CO4	2						2	1				2
CO5	3	3	3			3		2				

**CO->PSO MAPPING - CET206 - TRANSPORTATION ENGINEERING**

CO/PSO	PSO1	PSO2	PSO3
CO1	3	2	1
CO2	2	2	1
CO3	3	2	1
CO4	2	1	
CO5	2	1	

**COURSE->PO MAPPING - CET206 - TRANSPORTATION ENGINEERING**

CET206/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	3	3	1		3	3	2	1	2		2

**COURSE->PSO MAPPING - CET206 - TRANSPORTATION ENGINEERING**

CET206/PSO	PSO1	PSO2	PSO3
	3	2	1

**EST200**

Course Code	Course Name	L-T-P:C	Year of Introduction
EST200	Design & Engineering	2-0-0:2	2019

No.	Course Outcome - EST200 - Design & Engineering	Target
CO1	Explain the different concepts and principles involved in design engineering	66%
CO2	Apply design thinking while learning and practicing engineering.	66%
CO3	Explain different aspects of design communication, modeling, prototyping and proofing.	66%
CO4	Apply design engineering concepts based on Learning and Problem-based Learning.	66%



CO5	Develop innovative, reliable, sustainable and economically viable designs incorporating knowledge in engineering.	66%
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**COURSE END SURVEY - EST200 - Design & Engineering**

Sl.No	Questions & Options
CO1	To what extent you learned the different concepts and principles involved in design engineering
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO2	To what extent did you learn to apply design thinking while learning and practicing engineering
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO3	Did you develop innovative, reliable, sustainable and economically viable designs incorporating different segments of knowledge in engineering
	Answer Choice- <i>Strongly Agree/Agree/Neutral Disagree/Strongly disagree</i>
CO4	How much did you learn about the application of design engineering concepts?
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO5	Could you develop innovative, reliable, sustainable and economically viable designs incorporating knowledge in engineering
	Answer Choice- <i>Strongly Agree/Agree/Neutral Disagree/Strongly disagree</i>

**CO->PO MAPPING - EST200 - Design & Engineering**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	2	1	3			2	2		2
CO2	3	2	2	2	1	3			2	2		2
CO3	3	2	2	2	1	3			2	2		2
CO4												
CO5												

**CO->PSO MAPPING - EST200 - Design & Engineering**

CO/PSO	PSO1	PSO2	PSO3
CO1	3	2	1
CO2	2	2	1
CO3		2	1
CO4			
CO5			

**COURSE->PO MAPPING - EST200 - Design & Engineering**

EST200/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
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	3	2	2	2	1	3			2	2		2
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**COURSE->PSO MAPPING - EST200 - Design & Engineering**

EST200/PSO	PSO1	PSO2	PSO3
	3	2	1

**CEL202**

Course Code	Course Name	L-T-P:C	Year of Introduction
CEL202	MATERIAL TESTING LAB– I	0-0-3:2	2019

No.	Course Outcome - CEL202 - MATERIAL TESTING LAB– I	Target
CO1	To understand the behaviour of engineering materials under various forms and stages of loading	58%
CO2	To Characterize the elastic properties of various materials.	58%
CO3	To Evaluate the strength and stiffness properties of engineering materials under various loading conditions.	58%
CO4	To reproduce the basic knowledge of mathematics and engineering in finding the strength in tension, compression, shear and torsion.	58%
CO5	Evaluate and analyze the suitability of materials from data collected by physical tests done on samples	58%

**COURSE END SURVEY - CEL202 - MATERIAL TESTING LAB– I**

Sl.No	Questions & Options
CO1	To what extend you are able to understand the behaviour of engineering materials under various forms and stages of loading
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO2	To what extend Characterize the elastic properties of various materials?
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO3	To what extend Evaluate the strength and stiffness properties of engineering materials under various loading conditions.>
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO4	to what exted you are able to reproduce the basic knowledge of mathematics and engineering in finding the strength in tension, compression, shear and torsion.
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO5	to what exted you are able to Evaluate and analyze the suitability of materials from data collected by physical tests done on samples
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>

**CO->PO MAPPING - CEL202 - MATERIAL TESTING LAB- I**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	2	1	3			2	2		2
CO2	3	2	2	2	1	3			2	2		2
CO3	3	2	2	2	1	3			2	2		2
CO4												
CO5												

**CO->PSO MAPPING - CEL202 - MATERIAL TESTING LAB- I**

CO/PSO	PSO1	PSO2	PSO3
CO1	3	2	2
CO2	2		1
CO3	2	1	
CO4			
CO5			

**COURSE->PO MAPPING - CEL202 - MATERIAL TESTING LAB- I**

CEL202/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	2	2	2	1	3			2	2		2

**COURSE->PSO MAPPING - CEL202 - MATERIAL TESTING LAB- I**

CEL202/PSO	PSO1	PSO2	PSO3
	3	2	2

**MCN202**

Course Code	Course Name	L-T-P:C	Year of Introduction
MCN202	CONSTITUTION OF INDIA	2-0-0:0	2019

No.	Course Outcome - MCN202 - CONSTITUTION OF INDIA	Target
CO1	Awareness of Constitution of India	60%
CO2	Knowing duties and rights of Citizens	60%
CO3	Understanding the working of union executive, parliament..	60%
CO4	Understanding the working of judiciary, legislature, state executive	60%
CO5	Utilize special provision and statutory institutions	60%

CO6	Patriotism and being responsible citizens.	60%
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**COURSE END SURVEY - MCN202 - CONSTITUTION OF INDIA**

Sl.No	Questions & Options
CO1	Did you have the awareness of constitution of India
	Answer Choice- <i>Strongly Agree/Agree/Neutral Disagree/Strongly disagree</i>
CO2	Are you able to know about the duties and rights of Citizens
	Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>
CO3	Did you able to understand the working of union executive, parliament..
	Answer Choice- <i>Very high degree/High Degree/Moderate degree/Small Degree/Not at all</i>
CO4	Do you understand the working of judiciary, legislature, state executive
	Answer Choice- <i>Strongly Agree/Agree/Neutral Disagree/Strongly disagree</i>
CO5	Are you aware about the special provision and statutory institutions
	Answer Choice- <i>Very satisfied/Satisfied/Neither satisfied nor dissatisfied/Dissatisfied /Very dissatisfied</i>
CO6	Did you get clear idea about the responsibilities of a citizens and importance patriotism
	Answer Choice- <i>Strongly Agree/Agree/Neutral Disagree/Strongly disagree</i>

**CO->PO MAPPING - MCN202 - CONSTITUTION OF INDIA**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	1	1		1	2						
CO2		2	1	1	1	2						
CO3		3	2		1	1						
CO4		2	1		2	1						
CO5		2	2		1	2						
CO6		3	2	1	1	1						

**CO->PSO MAPPING - MCN202 - CONSTITUTION OF INDIA**

CO/PSO	PSO1	PSO2	PSO3
CO1		1	3
CO2		1	3
CO3		2	3
CO4		2	3
CO5	3	3	3

CO6		1	3
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**COURSE->PO MAPPING - MCN202 - CONSTITUTION OF INDIA**

MCN202/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	1	3	2	1	2	2						

**COURSE->PSO MAPPING - MCN202 - CONSTITUTION OF INDIA**

MCN202/PSO	PSO1	PSO2	PSO3
	3	3	3

**CEL204**

Course Code	Course Name	L-T-P:C	Year of Introduction
CEL204	Fluid Mechanics Lab	0-0-3:2	2019

No.	Course Outcome - CEL204 - Fluid Mechanics Lab	Target
CO1	Apply fundamental knowledge of fluid mechanics to corresponding experiments	60%
CO2	Demonstrate the stability of floating bodies	60%
CO3	Demonstrate the working of different types of valves and identify the losses involved in pipe flow	60%
CO4	Demonstrate Bernoulli equation and its application to measurement of flow using different equipments	60%
CO5	Analyse experimental data, interpret the results and document the experimentation in the prescribed manner	60%

**COURSE END SURVEY - CEL204 - Fluid Mechanics Lab**

Sl.No	Questions & Options
CO1	Are you able to apply fundamental fluid mechanics knowledge to corresponding experiments?
	Answer Choice- <i>Very frequently/Frequently/Rarely Very rarely/Never</i>
CO2	Did you grasp Archimedes' principle and the stability of a floating body?
	Answer Choice- <i>Very advanced/Advanced/Proficient/Basic/ Minimal</i>
CO3	Is the demonstration of the operation of various types of valves and the identification of the losses involved in pipe flow assisting you in gaining a better understanding of the theory?
	Answer Choice- <i>Extremely helpful/Moderately helpful/ Helpful/A little helpful/Not at all helpful</i>
CO4	Are you now able to apply Bernoulli's theorem to a variety of fluid flow applications?
	Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>
	Are you able to analyse experimental data, interpret the results, and document the experiment?

CO5	Answer Choice- <i>Very advanced/Advanced/Proficient/Basic/ Minimal</i>
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**CO->PO MAPPING - CEL204 - Fluid Mechanics Lab**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	3								
CO2	3	3	2	3								
CO3	3	3	2	3								
CO4	3	3	2	3								
CO5	3	2	1	3	1				1	1		

**CO->PSO MAPPING - CEL204 - Fluid Mechanics Lab**

CO/PSO	PSO1	PSO2	PSO3
CO1	3		
CO2	3		
CO3	3		
CO4	3		
CO5	3		1

**COURSE->PO MAPPING - CEL204 - Fluid Mechanics Lab**

CEL204/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	3	2	3	1				1	1		

**COURSE->PSO MAPPING - CEL204 - Fluid Mechanics Lab**

CEL204/PSO	PSO1	PSO2	PSO3
	3		1

**SEMESTER-5****CE301**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE301	Design of Concrete Structures I	3-1-0:4	2016

No.	Course Outcome - CE301 - Design of Concrete Structures I	Target
CO1	Apply the fundamental concepts of limit state method to solve problems related to structures	66%
CO2	Practice IS code provisions for the design of concrete elements	61%

CO3	Design the structural behaviour of reinforced concrete elements in bending, shear, compression and torsion.	61%
CO4	Design beams, slabs, stairs, and columns and draw the details of reinforcement.	65.5%
CO5	Analyze and design for deflection and crack control of reinforced concrete elements.	61.5%

**COURSE END SURVEY - CE301 - Design of Concrete Structures I**

Sl.No	Questions & Options
CO1	To what extend you are able to Apply the fundamental concepts of limit state method to solve problems related to structures
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO2	To what extend you are able to Practice IS code provisions for the design of concrete elements
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO3	To what extend you are able to Analyze and design the structural behavior of reinforced concrete elements in bending, shear, compression and torsion.
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO4	To what extend you are able to Design beams, slabs, stairs, and columns and draw the details of reinforcement.
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO5	To what extend you are able to Analyze and design for deflection and crack control of reinforced concrete elements.
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>

**CO->PO MAPPING - CE301 - Design of Concrete Structures I**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3					2				2
CO2	3	3	3		1	2		2				2
CO3	3	3	3		1					1		2
CO4	3	3	3		1					2		2
CO5	3	3	3									2

**CO->PSO MAPPING - CE301 - Design of Concrete Structures I**

CO/PSO	PSO1	PSO2	PSO3
CO1	3	3	3
CO2	3	3	3
CO3	3	3	3
CO4	3	3	3

CO5	3	3	3
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**COURSE->PO MAPPING - CE301 - Design of Concrete Structures I**

CE301/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	3	3		1	2		2		2		2

**COURSE->PSO MAPPING - CE301 - Design of Concrete Structures I**

CE301/PSO	PSO1	PSO2	PSO3
	3	3	3

**CE307**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE307	Geomatics	3-0-0:3	2016

No.	Course Outcome - CE307 - Geomatics	Target
CO1	Check and balance traverses	65%
CO2	Design a suitable curve in roads depending upon topography	65%
CO3	Apply the principles of advanced surveying to improve the efficiency of surveying	65%
CO4	Distinguish between different methods of advanced surveying	65%
CO5	Analyze spatial representation of data	65%

**COURSE END SURVEY - CE307 - Geomatics**

Sl.No	Questions & Options
CO1	to what extent you are able to check and balance traverses
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO2	To what extent you are able to design a suitable curve in roads depending upon topography
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO3	To what extent you are able to apply the principles of advanced surveying to improve the efficiency of surveying
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO4	To what extent you are able to distinguish between different methods of advanced surveying
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO5	To what extent you are able to analyze spatial representation of data
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>



**CO->PO MAPPING - CE307 - Geomatics**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	1	3	1	2						
CO2	3	2	3	2	2		3	2	2		2	
CO3	2	2	3	2	3			2	1			1
CO4	1	1	2	1	1						1	2
CO5	3	1	2	2	3	3	3			3	1	3

**CO->PSO MAPPING - CE307 - Geomatics**

CO/PSO	PSO1	PSO2	PSO3
CO1	1		
CO2	3	3	2
CO3	2	1	
CO4	2	1	
CO5	3	2	2

**COURSE->PO MAPPING - CE307 - Geomatics**

CE307/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	2	3	3	3	3	3	2	2	3	2	3

**COURSE->PSO MAPPING - CE307 - Geomatics**

CE307/PSO	PSO1	PSO2	PSO3
	3	3	2

**CE309**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE309	Water Resources Engineering	3-0-0:3	2016

No.	Course Outcome - CE309 - Water Resources Engineering	Target
CO1	Describe the hydrologic cycle and estimate the different components	61%
CO2	Determine crop water requirements for design of irrigation systems	61%
CO3	Compute the yield of aquifers and wells.	61%
CO4	Describe the features of various river training works	61%
CO5	Estimate the storage capacity of reservoirs and their useful life.	61%

**COURSE END SURVEY - CE309 - Water Resources Engineering**

Sl.No	Questions & Options
CO1	To what extend you are able to describe the hydrologic cycle and estimate the different components
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO2	To what extend you are able to determine crop water requirements for design of irrigation systems
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO3	To what extend you are able to compute the yield of aquifers and wells.
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO4	To what extend you are able to describe the features of various river training works
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO5	To what extend you are able to estimate the storage capacity of reservoirs and their useful life
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>

**CO->PO MAPPING - CE309 - Water Resources Engineering**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	2									2
CO2	3	3	3				1					2
CO3	3	3	2									2
CO4	3	2	2									2
CO5	3	2	2	2		2	1					2

**CO->PSO MAPPING - CE309 - Water Resources Engineering**

CO/PSO	PSO1	PSO2	PSO3
CO1	2		
CO2	3	1	
CO3	3		
CO4	2		
CO5	3	1	

**COURSE->PO MAPPING - CE309 - Water Resources Engineering**

CE309/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	3	3	2		2	1					2

**COURSE->PSO MAPPING - CE309 - Water Resources Engineering**

CE309/PSO	PSO1	PSO2	PSO3

	3	1	
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**CE361**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE361	Advanced Concrete Technology	3-0-0:3	2016

No.	Course Outcome - CE361 - Advanced Concrete Technology	Target
CO1	Identify the functional role of aggregates, admixtures and cement in concrete and determine their properties as per specifications	56%
CO2	Acquire and determine the engineering properties of fresh and hardened concrete	56%
CO3	Design a concrete mix using ACI and IS code methods to fulfill the required properties of fresh and hardened concrete	56%
CO4	Select and design special concretes depending on their specific applications	56%
CO5	Evaluate the service life of structure based on durability and demonstrate the technique of non-destructive testing of concrete	56%

**COURSE END SURVEY - CE361 - Advanced Concrete Technology**

Sl.No	Questions & Options
CO1	To what extent are you able to identify the functional role of aggregates, admixtures and cement in concrete and determine their properties as per specifications Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO2	Are you equipped to acquire and determine the engineering properties of fresh and hardened concrete Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO3	Can you design a concrete mix using ACI and IS code methods to fulfill the required properties of fresh and hardened concrete Answer Choice- <i>Very high degree/High Degree/Moderate degree/Small Degree/Not at all</i>
CO4	Are you able to select and design special concretes depending on their specific applications Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO5	Can you evaluate the service life of structure based on durability and conduct or supervise non-destructive testing of concrete Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>

**CO->PO MAPPING - CE361 - Advanced Concrete Technology**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2					3	3	2				2
CO2	2						1	2				2

CO3	2	2	2				3	3		2		2
CO4	2	2	2					2				2
CO5	1	2	2			3						2

**CO->PSO MAPPING - CE361 - Advanced Concrete Technology**

CO/PSO	PSO1	PSO2	PSO3
CO1	2	1	2
CO2	2		2
CO3	2	2	2
CO4	2	2	2
CO5	2		

**COURSE->PO MAPPING - CE361 - Advanced Concrete Technology**

CE361/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	2	2	2			3	3	3		2		2

**COURSE->PSO MAPPING - CE361 - Advanced Concrete Technology**

CE361/PSO	PSO1	PSO2	PSO3
	2	2	2

**CE341**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE341	Design Project	0-1-2:2	2016

No.	Course Outcome - CE341 - Design Project	Target
CO1	Analyze engineering aspects of design with reference to simple products	67.5%
CO2	Foster innovation in the design of products, processes or systems	67.5%
CO3	Analyze problem requirements and arrive at workable design solutions	67.5%
CO4	Develop designs that add value to products and solve technical problems	67.5%
CO5	Design and develop components, products and technologies in the engineering field	67.5%

**COURSE END SURVEY - CE341 - Design Project**

Sl.No	Questions & Options
CO1	To what extend you are able to analyze engineering aspects of design with reference to simple products
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>

CO2	To what extend you are able to foster innovation in the design of products, processes or systems
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO3	To what extend you are able to develop designs that add value to products and solve technical problems
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO4	To what extend you are able to design and develop components, products and technologies in the engineering field
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO5	To what extend you are able to analyze problem requirements and arrive at workable design solutions
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>

**CO->PO MAPPING - CE341 - Design Project**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	3	1						2	2		
CO2	1	3	1				1		2	2	1	
CO3	2	3	3	1			1		3	2	1	
CO4	3	1	3		2		1		3	3	1	
CO5	3	1	3		2	2			3	3	1	1

**CO->PSO MAPPING - CE341 - Design Project**

CO/PSO	PSO1	PSO2	PSO3
CO1	1		
CO2	3		
CO3	3	2	
CO4	3	2	
CO5	3	2	

**COURSE->PO MAPPING - CE341 - Design Project**

CE341/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	3	3	1	2	2	1		3	3	1	1

**COURSE->PSO MAPPING - CE341 - Design Project**

CE341/PSO	PSO1	PSO2	PSO3
	3	2	

**CE333**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE333	Geotechnical Engineering Lab	0-0-3:1	2016

No.	Course Outcome - CE333 - Geotechnical Engineering Lab	Target
CO1	Develop a working knowledge about laboratory tests as per IS for determination of physical, index and engineering properties of soil	60%
CO2	Evaluate the behaviour and classify soil based on laboratory test results	60%
CO3	Evaluate the permeability and shear strength characteristics of soil	60%
CO4	Evaluate settlement characteristics of soil	60%
CO5	Evaluate compaction characteristics of soil required for field application	60%

**COURSE END SURVEY - CE333 - Geotechnical Engineering Lab**

Sl.No	Questions & Options
CO1	To what extend you are able to develop working knowledge about laboratory tests as per IS for the determination of physical ,index and engineering properties of soil
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO2	To what extend you are able to evaluate the behaviour of soil and classify them based on laboratory test results
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO3	To what extend you are able to evaluate the permeability and shear strength characteristics of soil
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO4	To what extend you are able to evaluate the settlement characteristics of soil
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO5	To what extend you are able to evaluate the compaction characteristics of soil required for field application
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5

**CO->PO MAPPING - CE333 - Geotechnical Engineering Lab**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2		1					2	1		
CO2	2	2		1					2	1		
CO3	2	2		1					2	1		
CO4	2	2		1					2	1		
CO5	2	2		1					2	1		

**CO->PSO MAPPING - CE333 - Geotechnical Engineering Lab**

CO/PSO	PSO1	PSO2	PSO3
CO1	2	2	
CO2	2	2	
CO3	2	1	
CO4	2	1	
CO5	2	1	

**COURSE->PO MAPPING - CE333 - Geotechnical Engineering Lab**

CE333/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	2	2		1					2	1		

**COURSE->PSO MAPPING - CE333 - Geotechnical Engineering Lab**

CE333/PSO	PSO1	PSO2	PSO3
	2	2	

**CE303**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE303	Structural Analysis- II	3-0-0:3	2016

No.	Course Outcome - CE303 - Structural Analysis- II	Target
CO1	To analyze indeterminate beams using force method, accounting for settlement effects	57%
CO2	To analyze indeterminate beams and frames using displacement methods	57%
CO3	To analyze beams curved in the plan	57%
CO4	To infer the plastic behaviour of beams and frames	52%
CO5	To perform plastic analysis of structures	56%

**COURSE END SURVEY - CE303 - Structural Analysis- II**

Sl.No	Questions & Options
CO1	To what extent you are able to analyze indeterminate beams using force method, accounting for settlement effects?
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO2	To what extent you are able to analyze indeterminate beams and frames using displacement methods?
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>

CO3	To what extent you are able to analyze beams curved in the plan?
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO4	To what extent you are able to infer the plastic behaviour of beams and frames
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO5	To what extent you are able to perform plastic analysis of structures
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>

**CO->PO MAPPING - CE303 - Structural Analysis- II**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2		1					1		2
CO2	3	3	2		1					1		2
CO3	3	3	2		1					1		2
CO4	3	3	2		1							2
CO5	3	3	2		1					1		2

**CO->PSO MAPPING - CE303 - Structural Analysis- II**

CO/PSO	PSO1	PSO2	PSO3
CO1	3		1
CO2	3		1
CO3	3		1
CO4	3		1
CO5	3		1

**COURSE->PO MAPPING - CE303 - Structural Analysis- II**

CE303/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	3	2		1					1		2

**COURSE->PSO MAPPING - CE303 - Structural Analysis- II**

CE303/PSO	PSO1	PSO2	PSO3
	3		1

**CE305**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE305	Geotechnical Engineering- II	3-0-0:3	2016



No.	Course Outcome - CE305 - Geotechnical Engineering- II	Target
CO1	Analyze the basic principles and theories governing vertical stress on soil	61%
CO2	Analyze the basic theories and determine lateral earth pressure acting on structures	57%
CO3	Determine bearing capacity of soil for various foundation systems including foundation settlement	57%
CO4	Design shallow, deep and machine foundation, adopting existing theories and considering soil properties	56%
CO5	Plan and implement site investigation programs to obtain necessary design parameters	57%

**COURSE END SURVEY - CE305 - Geotechnical Engineering- II**

Sl.No	Questions & Options
CO1	To what extend you are able to analyze the basic principles and theories governing vertical stress on soil
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO2	To what extend you are able to analyze the basic theories and able to determine lateral earth pressure acting on structures
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO3	To what extend you are able to determine the bearing capacity of soil for various foundation systems including foundation settlement
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO4	To what extend you are able to design swallow,deep and machine foundation adopting existing theories and considering soil properties
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO5	To what extend you are able to plan and implement site investigation programs to obtain necessary design parameters
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5

**CO->PO MAPPING - CE305 - Geotechnical Engineering- II**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	1			2				1		1
CO2	3	2	2			2				1		1
CO3	3	2	2			2				1		1
CO4	3	2	2			2				1		1
CO5	3	2	1			2				2	1	1

**CO->PSO MAPPING - CE305 - Geotechnical Engineering- II**

CO/PSO	PSO1	PSO2	PSO3
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CO1	3	1	
CO2	3	2	
CO3	3	2	
CO4	3	2	
CO5	3	1	

**COURSE->PO MAPPING - CE305 - Geotechnical Engineering- II**

CE305/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	2	2			2				2	1	1

**COURSE->PSO MAPPING - CE305 - Geotechnical Engineering- II**

CE305/PSO	PSO1	PSO2	PSO3
	3	2	

**CE331**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE331	Materials Testing Lab II	0-0-3:1	2016

No.	Course Outcome - CE331 - Materials Testing Lab II	Target
CO1	1. Analyze the properties of constituent materials of concrete.	65%
CO2	2. Assess the behaviour of concrete in the fresh and hardened state.	65%
CO3	3. Design the concrete mixes using ACI and IS code methods	65%
CO4	4. Evaluate the properties of tiles and bricks.	65%
CO5	5. Conduct non-destructive test on cement structures.	65%

**COURSE END SURVEY - CE331 - Materials Testing Lab II**

Sl.No	Questions & Options
CO1	To what extent you are able to test all the concrete materials as per IS code
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO2	To what extent you are able to determine the properties of fresh and hardened concrete
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO3	To what extent you are able to design the concrete mix using ACI and IS code methods
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>

CO4	To what extent you are able to select and design special concretes depending on their specific applications
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO5	To what extent you are able to carry out non-destructive testing of concrete structures.
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>

**CO->PO MAPPING - CE331 - Materials Testing Lab II**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1				1				2	2		
CO2	1				1				2	2		
CO3	2	1	3			2	2		2	2		1
CO4	2	1	3				1		2	2		1
CO5	1	1			2	2			2	2		1

**CO->PSO MAPPING - CE331 - Materials Testing Lab II**

CO/PSO	PSO1	PSO2	PSO3
CO1	2		
CO2	2		
CO3	2	2	
CO4	2	2	
CO5	2		

**COURSE->PO MAPPING - CE331 - Materials Testing Lab II**

CE331/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	2	1	3		2	2	2		2	2		1

**COURSE->PSO MAPPING - CE331 - Materials Testing Lab II**

CE331/PSO	PSO1	PSO2	PSO3
	2	2	

**CET301**

Course Code	Course Name	L-T-P:C	Year of Introduction
CET301	STRUCTURAL ANALYSIS – I	3-1-0:4	2019

No.	Course Outcome - CET301 - STRUCTURAL ANALYSIS – I	Target
CO1	Apply the principles of solid mechanics to analyse trusses	56%

CO2	Apply various methods to determine deflections in statically determinate structures	56%
CO3	Identify the problems with static indeterminacy and tackling such problems by means of the method of consistent deformations and energy principles	56%
CO4	Apply specific methods such as slope deflection and moment distribution methods of structural analysis for typical structures with different characteristics.	56%
CO5	Apply suitable methods of analysis for various types of structures including cables, suspension bridges and arches	56%
CO6	Analyse the effects of moving loads on structures using influence lines. Understanding, Analysing, Applying	56%

**COURSE END SURVEY - CET301 - STRUCTURAL ANALYSIS – I**

Sl.No	Questions & Options
CO1	CO2
CO3	CO4
CO5	CO6

**CO->PO MAPPING - CET301 - STRUCTURAL ANALYSIS – I**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2										
CO2	2	2										
CO3	2	2										
CO4	2	2										
CO5	2	2										
CO6	2	2										

**CO->PSO MAPPING - CET301 - STRUCTURAL ANALYSIS – I**

CO/PSO	PSO1	PSO2	PSO3
CO1			
CO2			
CO3			
CO4			
CO5			
CO6			

**COURSE->PO MAPPING - CET301 - STRUCTURAL ANALYSIS – I**

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CET301/PO												

	2	2										
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**COURSE->PSO MAPPING - CET301 - STRUCTURAL ANALYSIS – I**

CET301/PSO	PSO1	PSO2	PSO3

**CET303**

Course Code	Course Name	L-T-P:C	Year of Introduction
CET303	DESIGN OF CONCRETE STRUCTURES	3-1-0:4	2019

No.	Course Outcome - CET303 - DESIGN OF CONCRETE STRUCTURES	Target
CO1	Recall the fundamental concepts of limit state design and code provisions for design of concrete members under bending, shear, compression and torsion	60%
CO2	Analyse reinforced concrete sections to determine the ultimate capacity in bending, shear and compression.	60%
CO3	Design and detail beams, slab, stairs and footings using IS code provisions.	60%
CO4	Design and detail columns using IS code and SP 16 design charts.	60%
CO5	Explain the criteria for earthquake resistant design of structures and ductile detailing of concrete structures subjected to seismic forces	65%

**COURSE END SURVEY - CET303 - DESIGN OF CONCRETE STRUCTURES**

Sl.No	Questions & Options
CO1	CO2
CO3	CO4
CO5	

**CO->PO MAPPING - CET303 - DESIGN OF CONCRETE STRUCTURES**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1		1									
CO2	3	3										
CO3	3		3					2				
CO4	3		3					2				
CO5	1		1									

**CO->PSO MAPPING - CET303 - DESIGN OF CONCRETE STRUCTURES**

CO/PSO	PSO1	PSO2	PSO3
CO1			

CO2			
CO3			
CO4			
CO5			

**COURSE->PO MAPPING - CET303 - DESIGN OF CONCRETE STRUCTURES**

CET303/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	3	3					2				

**COURSE->PSO MAPPING - CET303 - DESIGN OF CONCRETE STRUCTURES**

CET303/PSO	PSO1	PSO2	PSO3

**CET305**

Course Code	Course Name	L-T-P:C	Year of Introduction
CET305	GEOTECHNICAL ENGINEERING – II	4-0-0:4	2019

No.	Course Outcome - CET305 - GEOTECHNICAL ENGINEERING – II	Target
CO1	Understand soil exploration methods	60%
CO2	Explain the basic concepts, theories and methods of analysis in foundation engineering	60%
CO3	Calculate bearing capacity, pile capacity, foundation settlement and earth pressure	60%
CO4	Analyze shallow and deep foundations	60%
CO5	Solve the field problems related to geotechnical engineering	60%

**COURSE END SURVEY - CET305 - GEOTECHNICAL ENGINEERING – II**

Sl.No	Questions & Options
CO1	To what extent were you able to understand soil exploration methods
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO2	To what extent were you able to understand the basic concepts, theories and methods of analysis in foundation engineering
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO3	Are you able to calculate bearing capacity, pile capacity, foundation settlement and earth pressure
	Answer Choice- <i>5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5</i>
CO4	Are you able to analyze shallow and deep foundations

	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO5	To what extent are you able to solve the field problems related to geotechnical engineering
	Answer Choice- Excellent/Very Good/Good/Satisfactory/Poor

**CO->PO MAPPING - CET305 - GEOTECHNICAL ENGINEERING – II**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3			3								
CO2	3											
CO3	2	3										
CO4	2	2	3									
CO5	3	3										

**CO->PSO MAPPING - CET305 - GEOTECHNICAL ENGINEERING – II**

CO/PSO	PSO1	PSO2	PSO3
CO1			
CO2			
CO3			
CO4			
CO5			

**COURSE->PO MAPPING - CET305 - GEOTECHNICAL ENGINEERING – II**

CET305/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	3	3	3								

**COURSE->PSO MAPPING - CET305 - GEOTECHNICAL ENGINEERING – II**

CET305/PSO	PSO1	PSO2	PSO3

**CET307**

Course Code	Course Name	L-T-P:C	Year of Introduction
CET307	HYDROLOGY & WATER RESOURCES ENGINEERING	4-0-0:4	2019

No.	Course Outcome - CET307 - HYDROLOGY & WATER RESOURCES ENGINEERING	Target
CO1	To describe and estimate the different components of hydrologic cycle by processing hydrometeorological data	58%

CO2	To determine the crop water requirements for the design of irrigation canals by recollecting the principles of irrigation engineering	58%
CO3	To perform the estimation of streamflow and/or describe the river behavior and control structures	58%
CO4	To describe and apply the principles of reservoir engineering to estimate the capacity of reservoirs and their useful life	58%
CO5	To demonstrate the principles of groundwater engineering and apply them for computing the yield of aquifers and wells	58%

**COURSE END SURVEY - CET307 - HYDROLOGY & WATER RESOURCES ENGINEERING**

Sl.No	Questions & Options
CO1	To what extent are you able to describe and estimate the different components of hydrologic cycle by processing hydrometeorological data Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO2	To what extent are you able to determine the crop water requirements for the design of irrigation canals by recollecting the principles of irrigation engineering Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO3	To what extent are you able to perform the estimation of streamflow and/or describe the river behavior and control structures Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO4	To what extent are you able to describe and apply the principles of reservoir engineering to estimate the capacity of reservoirs and their useful life Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO5	To what extent are you able to demonstrate the principles of groundwater engineering and apply them for computing the yield of aquifers and wells Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>

**CO->PO MAPPING - CET307 - HYDROLOGY & WATER RESOURCES ENGINEERING**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3		1			1					
CO2	3	3					1					
CO3	3	2					1					
CO4	3	3					1					
CO5	3	3					1					

**CO->PSO MAPPING - CET307 - HYDROLOGY & WATER RESOURCES ENGINEERING**

CO/PSO	PSO1	PSO2	PSO3
CO1	3		



CO2	3		
CO3	3		
CO4	3		
CO5	3		

**COURSE->PO MAPPING - CET307 - HYDROLOGY & WATER RESOURCES ENGINEERING**

CET307/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	3		1			1					

**COURSE->PSO MAPPING - CET307 - HYDROLOGY & WATER RESOURCES ENGINEERING**

CET307/PSO	PSO1	PSO2	PSO3
	3		

**CET309**

Course Code	Course Name	L-T-P:C	Year of Introduction
CET309	CONSTRUCTION TECHNOLOGY& MANAGEMENT	3-0-0:3	2019

No.	Course Outcome - CET309 - CONSTRUCTION TECHNOLOGY& MANAGEMENT	Target
CO1	Describe the properties of materials used in construction	60%
CO2	Explain the properties of concrete and its determination	60%
CO3	Describe the various elements of building construction	60%
CO4	Explain the technologies for construction	60%
CO5	Describe the procedure for planning and executing public works	60%
CO6	Apply scheduling techniques in project planning and control	60%

**COURSE END SURVEY - CET309 - CONSTRUCTION TECHNOLOGY& MANAGEMENT**

Sl.No	Questions & Options
CO1	To what extent you are able to Describe the properties of materials used in construction
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO2	To what extent you are able to Explain the properties of concrete and its determination
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO3	To what extent you are able to Describe the various elements of building construction
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>

CO4	To what extent you are able to Explain the technologies for construction
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO5	To what extent you are able to Describe the procedure for planning and executing public works
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO6	To what extent you are able to Apply scheduling techniques in project planning and control
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>

**CO->PO MAPPING - CET309 - CONSTRUCTION TECHNOLOGY& MANAGEMENT**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2				1						
CO2	3	2										
CO3	3											
CO4	3											
CO5	3	3										
CO6	3	3	3	2								

**CO->PSO MAPPING - CET309 - CONSTRUCTION TECHNOLOGY& MANAGEMENT**

CO/PSO	PSO1	PSO2	PSO3
CO1	2		
CO2	2		
CO3	2		
CO4	2		
CO5	2		
CO6	2		

**COURSE->PO MAPPING - CET309 - CONSTRUCTION TECHNOLOGY& MANAGEMENT**

CET309/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	3	3	2		1						

**COURSE->PSO MAPPING - CET309 - CONSTRUCTION TECHNOLOGY& MANAGEMENT**

CET309/PSO	PSO1	PSO2	PSO3
	2		

MCN301

Course Code	Course Name	L-T-P:C	Year of Introduction
MCN301	Disaster Management	2-0-0:2	2019

No.	Course Outcome - MCN301 - Disaster Management	Target
CO1	To understand the various terminologies in use in disaster management parlance and organize each of these terms in relation to the disaster management cycle	55%
CO2	To understand different hazard types and vulnerability types and do vulnerability assessment	55%
CO3	To understand the components and describe the process of risk assessment, and apply appropriate methodologies to assess risk.	55%
CO4	To apply the core elements and phases of Disaster Risk Management and develop possible measures to reduce disaster risks across sectors and communities.	55%
CO5	To understand the factors that determine the nature of disaster response and discuss the various disaster response actions.	55%
CO6	To understand the various legislations and best practices for disaster management and risk reduction at the national and international levels.	55%

**COURSE END SURVEY - MCN301 - Disaster Management**

Sl.No	Questions & Options
CO1	Can you understand the various terminologies in use in disaster management parlance and organize each of these terms in relation to the disaster management cycle? Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO2	Can you understand different hazard types and vulnerability types and do vulnerability assessment? Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO3	Can you understand the components and describe the process of risk assessment, and apply appropriate methodologies to assess risk? Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO4	Are you able to apply the core elements and phases of Disaster Risk Management and develop possible measures to reduce disaster risks across sectors and communities? Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO5	Can you understand the factors that determine the nature of disaster response and discuss the various disaster response actions? Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO6	

**CO->PO MAPPING - MCN301 - Disaster Management**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1												

CO2												
CO3												
CO4												
CO5												
CO6												

**CO->PSO MAPPING - MCN301 - Disaster Management**

CO/PSO	PSO1	PSO2	PSO3
CO1			
CO2			
CO3			
CO4			
CO5			
CO6			

**COURSE->PO MAPPING - MCN301 - Disaster Management**

MCN301/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

**COURSE->PSO MAPPING - MCN301 - Disaster Management**

MCN301/PSO	PSO1	PSO2	PSO3

**CEL331**

Course Code	Course Name	L-T-P:C	Year of Introduction
CEL331	MATERIAL TESTING LAB – II	0-0-3:2	2019

**COURSE END SURVEY - CEL331 - MATERIAL TESTING LAB – II****CO->PO MAPPING - CEL331 - MATERIAL TESTING LAB – II**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

**CO->PSO MAPPING - CEL331 - MATERIAL TESTING LAB – II**

CO/PSO	PSO1	PSO2	PSO3

**COURSE->PO MAPPING - CEL331 - MATERIAL TESTING LAB – II**

CEL331/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

**COURSE->PSO MAPPING - CEL331 - MATERIAL TESTING LAB – II**

CEL331/PSO	PSO1	PSO2	PSO3

**CEL333**

Course Code	Course Name	L-T-P:C	Year of Introduction
CEL333	Geotechnical Engineering Lab	0-0-3:2	2019

No.	Course Outcome - CEL333 - Geotechnical Engineering Lab	Target
CO1	Identify and classify soil based on standard geotechnical experimental methods.	55%
CO2	Perform and analyse permeability tests.	55%
CO3	Interpret engineering behaviour of soils based on test results.	55%
CO4	Perform laboratory compaction, CBR and in-place density test for fill quality control in the field.	55%
CO5	Evaluate the strength of soil by performing various tests viz. direct shear test, unconfined compressive strength test and triaxial shear test.	55%
CO6	Evaluate settlement characteristics of soils.	55%

**COURSE END SURVEY - CEL333 - Geotechnical Engineering Lab**

Sl.No	Questions & Options
CO1	To what extend you are able to Identify and classify soil based on standard geotechnical experimental methods.
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO2	To what extend you are able to perform and analyse permeability tests.
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO3	To what extend you are able to interpret engineering behaviour of soils based on test results.
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO4	To what extend you are able to perform laboratory compaction, CBR and in-place density test for fill quality control in the field.
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO5	To what extend you are able to evaluate the strength of soil by performing various tests viz. direct shear test, unconfined compressive strength test and triaxial shear test.
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO6	To what extend you are able to evaluate settlement characteristics of soils.
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>

**CO->PO MAPPING - CEL333 - Geotechnical Engineering Lab**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3				1				2	2		
CO2	3				2				2	2		
CO3	3	2							2	2		
CO4	3				2				2	2		
CO5	3				2				2	2		
CO6	3	1			2				2	2		

**CO->PSO MAPPING - CEL333 - Geotechnical Engineering Lab**

CO/PSO	PSO1	PSO2	PSO3
CO1			
CO2			
CO3			
CO4			
CO5			
CO6			

**COURSE->PO MAPPING - CEL333 - Geotechnical Engineering Lab**

CEL333/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	2			2				2	2		

**COURSE->PSO MAPPING - CEL333 - Geotechnical Engineering Lab**

CEL333/PSO	PSO1	PSO2	PSO3

**SEMESTER-6**
**CE010601**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE010601	Design of Steel Structures	4-0-0:4	2010

**COURSE END SURVEY - CE010601 - Design of Steel Structures**
**CO->PO MAPPING - CE010601 - Design of Steel Structures**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
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**CO->PSO MAPPING - CE010601 - Design of Steel Structures**

CO/PSO	PSO1	PSO2	PSO3
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**COURSE->PO MAPPING - CE010601 - Design of Steel Structures**

CE010601/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

**COURSE->PSO MAPPING - CE010601 - Design of Steel Structures**

CE010601/PSO	PSO1	PSO2	PSO3

**CE010602**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE010602	Geotechnical Engineering II	4-0-0:4	2010

**COURSE END SURVEY - CE010602 - Geotechnical Engineering II****CO->PO MAPPING - CE010602 - Geotechnical Engineering II**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

**CO->PSO MAPPING - CE010602 - Geotechnical Engineering II**

CO/PSO	PSO1	PSO2	PSO3

**COURSE->PO MAPPING - CE010602 - Geotechnical Engineering II**

CE010602/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

**COURSE->PSO MAPPING - CE010602 - Geotechnical Engineering II**

CE010602/PSO	PSO1	PSO2	PSO3

**CE010603**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE010603	Structural Analysis II	4-0-0:4	2010

**COURSE END SURVEY - CE010603 - Structural Analysis II****CO->PO MAPPING - CE010603 - Structural Analysis II**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

**CO->PSO MAPPING - CE010603 - Structural Analysis II**

CO/PSO	PSO1	PSO2	PSO3

**COURSE->PO MAPPING - CE010603 - Structural Analysis II**

CE010603/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

**COURSE->PSO MAPPING - CE010603 - Structural Analysis II**

CE010603/PSO	PSO1	PSO2	PSO3

**CE010604**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE010604	Transportation Engineering-I	4-0-0:4	2010

**COURSE END SURVEY - CE010604 - Transportation Engineering-I****CO->PO MAPPING - CE010604 - Transportation Engineering-I**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

**CO->PSO MAPPING - CE010604 - Transportation Engineering-I**

CO/PSO	PSO1	PSO2	PSO3

**COURSE->PO MAPPING - CE010604 - Transportation Engineering-I**

CE010604/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

**COURSE->PSO MAPPING - CE010604 - Transportation Engineering-I**

CE010604/PSO	PSO1	PSO2	PSO3

**CE010605**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE010605	Water Resources Engineering	4-0-0:4	2010

**COURSE END SURVEY - CE010605 - Water Resources Engineering****CO->PO MAPPING - CE010605 - Water Resources Engineering**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

**CO->PSO MAPPING - CE010605 - Water Resources Engineering**

CO/PSO	PSO1	PSO2	PSO3

**COURSE->PO MAPPING - CE010605 - Water Resources Engineering**

CE010605/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

**COURSE->PSO MAPPING - CE010605 - Water Resources Engineering**

CE010605/PSO	PSO1	PSO2	PSO3

**CE010608**



Course Code	Course Name	L-T-P:C	Year of Introduction
CE010608	Material Testing Lab II	0-0-4:0	2010

**COURSE END SURVEY - CE010608 - Material Testing Lab II****CO->PO MAPPING - CE010608 - Material Testing Lab II**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
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**CO->PSO MAPPING - CE010608 - Material Testing Lab II**

CO/PSO	PSO1	PSO2	PSO3
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**COURSE->PO MAPPING - CE010608 - Material Testing Lab II**

CE010608/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

**COURSE->PSO MAPPING - CE010608 - Material Testing Lab II**

CE010608/PSO	PSO1	PSO2	PSO3

**CE010606**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE010606	Concrete Technology	4-0-0:4	2010

**COURSE END SURVEY - CE010606 - Concrete Technology****CO->PO MAPPING - CE010606 - Concrete Technology**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
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**CO->PSO MAPPING - CE010606 - Concrete Technology**

CO/PSO	PSO1	PSO2	PSO3
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**COURSE->PO MAPPING - CE010606 - Concrete Technology**

CE010606/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

**COURSE->PSO MAPPING - CE010606 - Concrete Technology**

CE010606/PSO	PSO1	PSO2	PSO3

**CE010606L05**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE010606L05	Concrete Technology	4-0-0:4	2010

**COURSE END SURVEY - CE010606L05 - Concrete Technology****CO->PO MAPPING - CE010606L05 - Concrete Technology**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
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**CO->PSO MAPPING - CE010606L05 - Concrete Technology**

CO/PSO	PSO1	PSO2	PSO3
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**COURSE->PO MAPPING - CE010606L05 - Concrete Technology**

CE010606L05/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

**COURSE->PSO MAPPING - CE010606L05 - Concrete Technology**

CE010606L05/PSO	PSO1	PSO2	PSO3

**CE010606L05**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE010606L05	Concrete Technology	4-0-0:4	2010

**COURSE END SURVEY - CE010606L05 - Concrete Technology****CO->PO MAPPING - CE010606L05 - Concrete Technology**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
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**CO->PSO MAPPING - CE010606L05 - Concrete Technology**

CO/PSO	PSO1	PSO2	PSO3
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**COURSE->PO MAPPING - CE010606L05 - Concrete Technology**

CE010606L05/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

**COURSE->PSO MAPPING - CE010606L05 - Concrete Technology**

CE010606L05/PSO	PSO1	PSO2	PSO3

**CE010607**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE010607	Computer Aided Design-1 Lab	0-0-4:0	2010

**COURSE END SURVEY - CE010607 - Computer Aided Design-1 Lab****CO->PO MAPPING - CE010607 - Computer Aided Design-1 Lab**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
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**CO->PSO MAPPING - CE010607 - Computer Aided Design-1 Lab**

CO/PSO	PSO1	PSO2	PSO3
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**COURSE->PO MAPPING - CE010607 - Computer Aided Design-1 Lab**

CE010607/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

**COURSE->PSO MAPPING - CE010607 - Computer Aided Design-1 Lab**

CE010607/PSO	PSO1	PSO2	PSO3

**CE302**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE302	Design of Hydraulic Structures	4-0-0:4	2016

No.	Course Outcome - CE302 - Design of Hydraulic Structures	Target
CO1	Demonstrate different components of a diversion headwork and the design theories associated with them.	61.5%
CO2	Describe the design theories for irrigation canal.	61.5%
CO3	Design minor irrigation structures such as regulators, cross drainage works and canal falls.	61.5%
CO4	Illustrate the principles of design of gravity, arch and earth dams	61.5%
CO5	Identify and explain various components of dams like galleries, spillways, etc.	61.5%

**COURSE END SURVEY - CE302 - Design of Hydraulic Structures**

Sl.No	Questions & Options
CO1	To what extend you are able to demonstrate different components of a diversion headwork and the design theories associated with them?
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO2	To what extend your are able to describe the design theories for irrigation canal?
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO3	To what extend you are able to design minor irrigation structures such as regulators, cross drainage works and canal falls?
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO4	To what extend you are able to illustrate the principles of design of gravity, arch and earth dams ?
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO5	To what extend you are able to identify and explain various components of dams like galleries, spillways, etc ?
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5

**CO->PO MAPPING - CE302 - Design of Hydraulic Structures**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	2		2		2		3		2
CO2	3	3	3			2				2		2
CO3	3	3	3	2		2		2		3		2
CO4	3	3	2			2		2		3		2
CO5	3	3	2			2				2		2

**CO->PSO MAPPING - CE302 - Design of Hydraulic Structures**

CO/PSO	PSO1	PSO2	PSO3
CO1	3	2	
CO2	3	3	2
CO3	3	3	2
CO4	2	2	2
CO5	2	1	

**COURSE->PO MAPPING - CE302 - Design of Hydraulic Structures**

CE302/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	3	3	2		2		2		3		2

**COURSE->PSO MAPPING - CE302 - Design of Hydraulic Structures**

CE302/PSO	PSO1	PSO2	PSO3
	3	3	2

**CE304**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE304	Design of Concrete Structures II	3-0-0:3	2016

No.	Course Outcome - CE304 - Design of Concrete Structures II	Target
CO1	Design eccentrically loaded and slender columns using SP 16 design charts and design different types of foundations	68%
CO2	Design and explain cantilever retaining wall and describe the design principles of Counterfort retaining wall	60%
CO3	Design and illustrate circular slabs and domes	58%
CO4	Design rectangular and circular water tanks using IS code coefficients (IS 3370).	58%
CO5	understand fundamentals of prestressed concrete including various losses	64%

**COURSE END SURVEY - CE304 - Design of Concrete Structures II**

Sl.No	Questions & Options
CO1	To what extent you are able to Design eccentrically loaded and slender columns using SP 16 design charts and design different types of foundations
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO2	To what extent you are able to Design and explain cantilever retaining wall and describe the design principles of Counter fort retaining wall
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO3	To what extent you are able to Design and illustrate circular slabs and domes
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO4	To what extent you are able to Design rectangular and circular water tanks using IS code coefficients (IS 3370).
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO5	To what extent you are able to lunderstand fundamentals of prestressed concrete including various losses.
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>

**CO->PO MAPPING - CE304 - Design of Concrete Structures II**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3			2		2	2	3		2
CO2	3	3	3			2		2	2	2		2
CO3	3	3	3			2		2	2	2		2
CO4	3	3	3			2		2	2	2		2
CO5	3	3	2			2		2	2	2		2

**CO->PSO MAPPING - CE304 - Design of Concrete Structures II**

CO/PSO	PSO1	PSO2	PSO3
CO1	3	3	3
CO2	3	3	3
CO3	3	3	3
CO4	3	3	3
CO5	3	3	2

**COURSE->PO MAPPING - CE304 - Design of Concrete Structures II**

CE304/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	3	3			2		2	2	3		2

**COURSE->PSO MAPPING - CE304 - Design of Concrete Structures II**

CE304/PSO	PSO1	PSO2	PSO3
	3	3	3

**CE306**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE306	Computer Programming and Computational Techniques	3-0-0:3	2016

No.	Course Outcome - CE306 - Computer Programming and Computational Techniques	Target
CO1	Analyze basic computer programming concepts and solve basic C++ programs using selection statements.	55%
CO2	Design basic C++ programs using looping and jump statements and use pointers and arrays to build programs for evaluation.	55%
CO3	Demonstrate the use of functions to solve problems.	55%
CO4	Develop skills to use structures, data handling through files in C++ and describe object oriented concepts such as class, object, inheritance etc.	55%
CO5	Illustrate basic numerical methods for interpolation and finding roots of equations.	55%
CO6	Utilize numerical techniques for integration and solution of partial differential equations.	55%

**COURSE END SURVEY - CE306 - Computer Programming and Computational Techniques**

Sl.No	Questions & Options
CO1	How far this course has helped you to identify basic computer programming concepts and solve basic C++ programs using selection statements?
	Answer Choice- <i>Extremely helpful/Moderately helpful/ Helpful/A little helpful/Not at all helpful</i>
CO2	How far this course has helped you to design and evaluate C++ programs using looping and jump statements, pointers and arrays?
	Answer Choice- <i>Extremely helpful/Moderately helpful/ Helpful/A little helpful/Not at all helpful</i>
CO3	How far this course has helped you to explore the advantages of using functions to solve problems?
	Answer Choice- <i>Extremely helpful/Moderately helpful/ Helpful/A little helpful/Not at all helpful</i>
CO4	How far this course has helped you to develop and implement structures, data handling through files in C++ and object oriented concepts?
	Answer Choice- <i>Extremely helpful/Moderately helpful/ Helpful/A little helpful/Not at all helpful</i>
CO5	How far this course has helped you to understand basic numerical methods for interpolation and use them to find roots of equations?
	Answer Choice- <i>Extremely helpful/Moderately helpful/ Helpful/A little helpful/Not at all helpful</i>

CO6	How far this course has helped you to apply numerical techniques for integration and solution of partial differential equations?
	Answer Choice- <i>Extremely helpful/Moderately helpful/ Helpful/A little helpful/Not at all helpful</i>

**CO->PO MAPPING - CE306 - Computer Programming and Computational Techniques**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2	2	1	2			2	2	3
CO2	3	3	2	2	2	1	2			2	2	3
CO3	3	3	2	2	2	1	2			2	2	3
CO4	3	3	2	2	2	1	2			2	2	3
CO5	3	3	3	2	1	1	1		2	2	3	1
CO6	3	3	3	2	1	1	1		2	2	3	1

**CO->PSO MAPPING - CE306 - Computer Programming and Computational Techniques**

CO/PSO	PSO1	PSO2	PSO3
CO1	3	2	2
CO2	3	2	2
CO3	3	2	2
CO4	3	2	2
CO5	3	1	3
CO6	3	1	3

**COURSE->PO MAPPING - CE306 - Computer Programming and Computational Techniques**

CE306/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	3	3	2	2	1	2		2	2	3	3

**COURSE->PSO MAPPING - CE306 - Computer Programming and Computational Techniques**

CE306/PSO	PSO1	PSO2	PSO3
	3	2	3

**CE308**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE308	Transportation Engineering-I	3-0-0:3	2016

No.	Course Outcome - CE308 - Transportation Engineering-I	Target
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CO1	Provide valuable insights into road safety, driver abilities, and limitations which need consideration in highway design and traffic engineering.	60.5%
CO2	Design highway allowing for different terrains, horizontal and vertical curves, maintaining the geometric standards specified by Indian Roads Congress	60.5%
CO3	Deal with traffic related issues including safety, planning, design, operation and control	65.5%
CO4	Assess alternative flexible pavement designs and choose appropriate methods for its maintenance	60.5%
CO5	Develop an understanding of various components of aircraft and air traffic aids.	60.5%

**COURSE END SURVEY - CE308 - Transportation Engineering-I**

Sl.No	Questions & Options
CO1	To what extent are you able to have insights into road safety, driver abilities and limitations which need consideration in highway design and traffic engineering  Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO2	To what extent are you able to design a highway allowing for different terrains, horizontal and vertical curves, maintaining the geometric standards specified by Indian Roads Congress  Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO3	To what extent are you able to deal with traffic related issues including safety, planning , design , operation and control  Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO4	To what extent are you able assess alternative pavement designs and choose appropriate methods for their maintenance  Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO5	To what extent are you able to improve operational efficiency and flexibility of airports and design various components of airports and air traffic aids  Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>

**CO->PO MAPPING - CE308 - Transportation Engineering-I**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2			2				1		2
CO2	3	3	3						2	1		2
CO3	3	3	3	2		2				1		2
CO4	3	3	2			2			2	1		2
CO5	1	2	2			2				1		2

**CO->PSO MAPPING - CE308 - Transportation Engineering-I**

CO/PSO	PSO1	PSO2	PSO3
CO1	3	2	1



CO2	3	2	1
CO3	3	2	2
CO4	3	2	2
CO5	2	1	

**COURSE->PO MAPPING - CE308 - Transportation Engineering-I**

CE308/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	3	3	2		2			2	1		2

**COURSE->PSO MAPPING - CE308 - Transportation Engineering-I**

CE308/PSO	PSO1	PSO2	PSO3
	3	2	2

**HS300**

Course Code	Course Name	L-T-P:C	Year of Introduction
HS300	Principles of Management	3-0-0:3	2016

No.	Course Outcome - HS300 - Principles of Management	Target
CO1	Manage people, organisation and environment for achieving competitive advantage	66%
CO2	Critically analyse, evaluate and manipulate management theories and practices	66%
CO3	Prepare an organizational plan and execute planning process based on the goals and objectives	66%
CO4	Design organizational structure and establish the relationship among departments.	66%
CO5	Demonstrate staffing and related human resource development functions to manage and appraise employees.	66%
CO6	Lead employees, subordinates and propose control activities in organisations.	66%

**COURSE END SURVEY - HS300 - Principles of Management**

Sl.No	Questions & Options
CO1	To what extent are you be able to manage people, organisation and environment for achieving competitive advantage?
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO2	To what extent can you critically analyse, evaluate and manipulate management theories and practices
	Answer Choice- <i>Very high degree/High Degree/Moderate degree/Small Degree/Not at all</i>
CO3	To what extent can you prepare an organizational plan and execute planning process based on the goals and objectives

	Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>
CO4	To what extent can you design organizational structure and establish the relationship among departments.
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO5	To what extent can you demonstrate staffing and related human resource development functions to manage and appraise employees.
	Answer Choice- <i>Very high degree/High Degree/Moderate degree/Small Degree/Not at all</i>
CO6	To what extent can you lead employees, subordinates and propose control activities in organisations.
	Answer Choice- <i>Very high degree/High Degree/Moderate degree/Small Degree/Not at all</i>

**CO->PO MAPPING - HS300 - Principles of Management**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	3	2	2	2	2	2	2	2	3	2	3
CO2	2	2	2	2	2	3	2	2	2	2	2	2
CO3	2	2	2	1	3	2	2	3	2	2	2	1
CO4	2	3	2	2	2	2	2	3	2	2	2	2
CO5	3	1	3	2	2	3	3	3	2	2	2	2
CO6	2	2	2	2	3	3	2	2	3	2	2	2

**CO->PSO MAPPING - HS300 - Principles of Management**

CO/PSO	PSO1	PSO2	PSO3
CO1	2	2	2
CO2	2	2	2
CO3	2	2	2
CO4	2	2	2
CO5	2	2	2
CO6	2	2	2

**COURSE->PO MAPPING - HS300 - Principles of Management**

HS300/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	3	3	2	3	3	3	3	3	3	2	3

**COURSE->PSO MAPPING - HS300 - Principles of Management**

HS300/PSO	PSO1	PSO2	PSO3
	2	2	2

**CE366**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE366	Traffic Engineering and Management	3-0-0:3	2016

No.	Course Outcome - CE366 - Traffic Engineering and Management	Target
CO1	Describe various traffic management and regulation measures including the use of ITS	62%
CO2	Determine the capacity and level of service of highways	62%
CO3	Design various types of road intersections and traffic signals	62%
CO4	Identify the causes of road accidents and analyze accident data	58%
CO5	Illustrate theory of traffic flow and interpret various concepts of traffic flow theory	58%

**COURSE END SURVEY - CE366 - Traffic Engineering and Management**

Sl.No	Questions & Options
CO1	To what extend you are able to Describe various traffic management and regulation measures including the use of ITS
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO2	To what extend you are able to determine the capacity and level of service of highways
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO3	To what extend you are able to design various types of road intersections and traffic signals
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO4	To what extend you are able to identify the causes of road accidents and analyze accident data
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO5	To what extend you are able to illustrate theory of traffic flow and interpret various concepts of traffic flow theory
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>

**CO->PO MAPPING - CE366 - Traffic Engineering and Management**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	3		1	2						2
CO2	3	2	3									
CO3	3	3	3		2	2						2
CO4	3	3	3		1	2						2
CO5	3	3	2								2	3

**CO->PSO MAPPING - CE366 - Traffic Engineering and Management**

CO/PSO	PSO1	PSO2	PSO3
CO1	3		
CO2	3		
CO3	3		
CO4	3	3	2
CO5	3	2	

**COURSE->PO MAPPING - CE366 - Traffic Engineering and Management**

CE366/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	3	3		2	2					2	3

**COURSE->PSO MAPPING - CE366 - Traffic Engineering and Management**

CE366/PSO	PSO1	PSO2	PSO3
	3	3	2

**CE332**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE332	TRANSPORTATION ENGINEERING LAB	0-0-3:1	2016

No.	Course Outcome - CE332 - TRANSPORTATION ENGINEERING LAB	Target
CO1	Assess the characteristics of aggregates used in pavement construction	62%
CO2	Evaluate the quality of subgrade soil used in pavement construction	62%
CO3	Assess the properties of bitumen to be used in pavement construction	62%
CO4	Analyze the properties of various bituminous mixes	62%
CO5	Evaluate the functional characteristics of pavements	62%

**COURSE END SURVEY - CE332 - TRANSPORTATION ENGINEERING LAB**

Sl.No	Questions & Options
CO1	To what extent you are able to assess the characteristics of aggregates used in pavement construction
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO2	To what extent you are able to evaluate the quality of subgrade soil used in pavement construction
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO3	To what extent you are able to assess the properties of bitumen to be used in pavement construction

	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO4	To what extent you are able to analyze the properties of various bituminous mixes
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO5	To what extent you are able to evaluate the functional characteristics of pavements
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>

**CO->PO MAPPING - CE332 - TRANSPORTATION ENGINEERING LAB**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2		2					3	2	3	3
CO2	3	2		2					3	2	3	3
CO3	3	2		2		3	3	3	3	2	3	3
CO4	3	2		2		3	3	3	3	2	3	3
CO5	3	2		2		3	3	3	3	2	3	3

**CO->PSO MAPPING - CE332 - TRANSPORTATION ENGINEERING LAB**

CO/PSO	PSO1	PSO2	PSO3
CO1	3	2	3
CO2	3	2	3
CO3	3	2	3
CO4	3	2	3
CO5	3	2	3

**COURSE->PO MAPPING - CE332 - TRANSPORTATION ENGINEERING LAB**

CE332/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	2		2		3	3	3	3	2	3	3

**COURSE->PSO MAPPING - CE332 - TRANSPORTATION ENGINEERING LAB**

CE332/PSO	PSO1	PSO2	PSO3
	3	2	3

**CE334**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE334	Computer Aided Civil Engineering Lab	0-0-3:1	2016

No.	Course Outcome - CE334 - Computer Aided Civil Engineering Lab	Target
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CO1	Model any type of structure with computer software.	65%
CO2	Analyze and design structures using softwares based on IS codal provisions.	65%
CO3	Demonstrate the basic concepts of AUTOCAD to develop structural drawings	65%
CO4	Perform survey operations using Total Station.	60%
CO5	Create and track an entire project to its completion using the elements of project management.	60%

**COURSE END SURVEY - CE334 - Computer Aided Civil Engineering Lab**

Sl.No	Questions & Options
CO1	To what extent you are capable of modelling a structure with softwares
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO2	To what extent you are capable of analysing and design a structure with the aid of STAAD
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO3	Are you capable of drawing any structural detailing in AUTOCAD.
	Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>
CO4	To what extent you are able to perform surveying using Total Station
	Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>
CO5	To what extent you are capable of planning and scheduling a project using Primavera.
	Answer Choice- <i>Very frequently/Frequently/Rarely Very rarely/Never</i>

**CO->PO MAPPING - CE334 - Computer Aided Civil Engineering Lab**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	3	3		3	3		1	3	2		2
CO2	3	3	3	2	3				3	2		
CO3	1	1			3			2	3	2		
CO4	3				3	3	1		3	2		2
CO5	1	1			3	3	1		3	3	3	2

**CO->PSO MAPPING - CE334 - Computer Aided Civil Engineering Lab**

CO/PSO	PSO1	PSO2	PSO3
CO1	1	3	3
CO2	2	3	3
CO3	1	3	1
CO4	1	3	2

CO5	1	3	2
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**COURSE->PO MAPPING - CE334 - Computer Aided Civil Engineering Lab**

CE334/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	3	3	2	3	3	1	2	3	3	3	2

**COURSE->PSO MAPPING - CE334 - Computer Aided Civil Engineering Lab**

CE334/PSO	PSO1	PSO2	PSO3
	2	3	3

**CE352**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE352	Comprehensive Exam	0-1-1:2	2016

No.	Course Outcome - CE352 - Comprehensive Exam	Target
CO1	Recall the fundamental concepts and facts in Civil Engineering	75.5%
CO2	Comprehend issues related to Civil Engineering	72.5%
CO3	Enhance analytical skills	72.5%
CO4	Refine subject knowledge	75.5%
CO5	Communicate with confidence in civil Engineering Solutions	72.5%

**COURSE END SURVEY - CE352 - Comprehensive Exam**

Sl.No	Questions & Options
CO1	Are you capable to provide a range of solutions to an engineering problem.
	Answer Choice- <i>Very frequently/Frequently/Rarely Very rarely/Never</i>
CO2	To what extent you are capable of applying knowledge of technical areas in civil engineering
	Answer Choice- <i>Very frequently/Frequently/Rarely Very rarely/Never</i>
CO3	To what extent you are able to identify, formulate, and solve civil engineering problems
	Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>
CO4	Are you able to Engage in problem solving and the application of Civil engineering principles to address the needs of society.
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO5	Are you capable to communicate confidently on a solution regarding a civil Engineering Problem
	Answer Choice- <i>Very frequently/Frequently/Rarely Very rarely/Never</i>

**CO->PO MAPPING - CE352 - Comprehensive Exam**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	3	2	2		1						
CO2	2	3	3		3		2	2				
CO3	2	3			3				2			3
CO4	2	2	2	2	1							2
CO5	2	2	3	2		1						1

**CO->PSO MAPPING - CE352 - Comprehensive Exam**

CO/PSO	PSO1	PSO2	PSO3
CO1	3	2	3
CO2	3	3	3
CO3	1	1	2
CO4	1	3	1
CO5	1	2	3

**COURSE->PO MAPPING - CE352 - Comprehensive Exam**

CE352/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	2	3	3	2	3	1	2	2	2			3

**COURSE->PSO MAPPING - CE352 - Comprehensive Exam**

CE352/PSO	PSO1	PSO2	PSO3
	3	3	3

**CE368**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE368	Prestressed Concrete	3-0-0:3	2016

No.	Course Outcome - CE368 - Prestressed Concrete	Target
CO1	Develop a working knowledge of essential concepts in prestressed concrete	51%
CO2	Analyse a prestressed member section	51%
CO3	Estimate losses of prestressing	51%
CO4	Design a prestressed member in accordance with standard procedures	51%
CO5	Evaluate the behaviour and design of end blocks and composite members and their applications	51%



**COURSE END SURVEY - CE368 - Prestressed Concrete**

Sl.No	Questions & Options
CO1	To which extent you are able to demonstrate essential concepts in prestressed concrete?
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO2	To what extent you are able to analyse a prestressed member for finding stresses and deflection in it?
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO3	To what extent you are able to estimate the losses in prestressing?
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO4	To what extent you are able to design a prestressed member in accordance with Codal procedures?
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO5	To what extent you are able to evaluate the behaviour and design of end blocks and composite members and their applications?
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>

**CO->PO MAPPING - CE368 - Prestressed Concrete**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	1	1					2	1	2
CO2	2	3	3	2					2	2		2
CO3	3	3	3	1						2		2
CO4	2	3	3	2		3	1	2	2	2		2
CO5	2	3	3	2	1	3	1	2	2	2		2

**CO->PSO MAPPING - CE368 - Prestressed Concrete**

CO/PSO	PSO1	PSO2	PSO3
CO1	3	3	2
CO2	3	3	2
CO3	2		1
CO4	3	3	2
CO5	3	3	2

**COURSE->PO MAPPING - CE368 - Prestressed Concrete**

CE368/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	3	3	2	1	3	1	2	2	2	1	2

**COURSE->PSO MAPPING - CE368 - Prestressed Concrete**

CE368/PSO	PSO1	PSO2	PSO3
	3	3	2

**CE374**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE374	Air Quality Management	3-0-0:3	2016

**COURSE END SURVEY - CE374 - Air Quality Management****CO->PO MAPPING - CE374 - Air Quality Management**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
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**CO->PSO MAPPING - CE374 - Air Quality Management**

CO/PSO	PSO1	PSO2	PSO3
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**COURSE->PO MAPPING - CE374 - Air Quality Management**

CE374/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

**COURSE->PSO MAPPING - CE374 - Air Quality Management**

CE374/PSO	PSO1	PSO2	PSO3

**SEMESTER-7****CE010701**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE010701	Design of Hydraulic Structures	4-0-0:4	2010

**COURSE END SURVEY - CE010701 - Design of Hydraulic Structures****CO->PO MAPPING - CE010701 - Design of Hydraulic Structures**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
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**CO->PSO MAPPING - CE010701 - Design of Hydraulic Structures**

CO/PSO	PSO1	PSO2	PSO3
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**COURSE->PO MAPPING - CE010701 - Design of Hydraulic Structures**

CE010701/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

**COURSE->PSO MAPPING - CE010701 - Design of Hydraulic Structures**

CE010701/PSO	PSO1	PSO2	PSO3

**CE010702**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE010702	Environmental Engineering- I	4-0-0:4	2010

**COURSE END SURVEY - CE010702 - Environmental Engineering- I****CO->PO MAPPING - CE010702 - Environmental Engineering- I**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
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**CO->PSO MAPPING - CE010702 - Environmental Engineering- I**

CO/PSO	PSO1	PSO2	PSO3
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**COURSE->PO MAPPING - CE010702 - Environmental Engineering- I**

CE010702/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

**COURSE->PSO MAPPING - CE010702 - Environmental Engineering- I**

CE010702/PSO	PSO1	PSO2	PSO3

**CE010704**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE010704	ARCHITECTURE AND TOWN PLANNING	4-0-0:4	2010

**COURSE END SURVEY - CE010704 - ARCHITECTURE AND TOWN PLANNING****CO->PO MAPPING - CE010704 - ARCHITECTURE AND TOWN PLANNING**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
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**CO->PSO MAPPING - CE010704 - ARCHITECTURE AND TOWN PLANNING**

CO/PSO	PSO1	PSO2	PSO3
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**COURSE->PO MAPPING - CE010704 - ARCHITECTURE AND TOWN PLANNING**

CE010704/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

**COURSE->PSO MAPPING - CE010704 - ARCHITECTURE AND TOWN PLANNING**

CE010704/PSO	PSO1	PSO2	PSO3

**CE010705**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE010705	TRANSPORTATION ENGINEERING - II	4-0-0:4	2010

**COURSE END SURVEY - CE010705 - TRANSPORTATION ENGINEERING - II**  
**CO->PO MAPPING - CE010705 - TRANSPORTATION ENGINEERING - II**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
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**CO->PSO MAPPING - CE010705 - TRANSPORTATION ENGINEERING - II**

CO/PSO	PSO1	PSO2	PSO3
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**COURSE->PO MAPPING - CE010705 - TRANSPORTATION ENGINEERING - II**

CE010705/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

**COURSE->PSO MAPPING - CE010705 - TRANSPORTATION ENGINEERING - II**

CE010705/PSO	PSO1	PSO2	PSO3

**CE010706L03**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE010706L03	Prestressed Concrete	4-0-0:4	2010

**COURSE END SURVEY - CE010706L03 - Prestressed Concrete**  
**CO->PO MAPPING - CE010706L03 - Prestressed Concrete**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
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**CO->PSO MAPPING - CE010706L03 - Prestressed Concrete**

CO/PSO	PSO1	PSO2	PSO3
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**COURSE->PO MAPPING - CE010706L03 - Prestressed Concrete**

CE010706L03/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

**COURSE->PSO MAPPING - CE010706L03 - Prestressed Concrete**

CE010706L03/PSO	PSO1	PSO2	PSO3

**CE010708**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE010708	TRANSPORTATION ENGINEERING LAB	0-0-4:0	2010

**COURSE END SURVEY - CE010708 - TRANSPORTATION ENGINEERING LAB**  
**CO->PO MAPPING - CE010708 - TRANSPORTATION ENGINEERING LAB**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
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**CO->PSO MAPPING - CE010708 - TRANSPORTATION ENGINEERING LAB**

CO/PSO	PSO1	PSO2	PSO3
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**COURSE->PO MAPPING - CE010708 - TRANSPORTATION ENGINEERING LAB**

CE010708/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

**COURSE->PSO MAPPING - CE010708 - TRANSPORTATION ENGINEERING LAB**

CE010708/PSO	PSO1	PSO2	PSO3

**CE010710**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE010710	Project	0-0-4:0	2010

**COURSE END SURVEY - CE010710 - Project****CO->PO MAPPING - CE010710 - Project**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

**CO->PSO MAPPING - CE010710 - Project**

CO/PSO	PSO1	PSO2	PSO3

**COURSE->PO MAPPING - CE010710 - Project**

CE010710/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

**COURSE->PSO MAPPING - CE010710 - Project**

CE010710/PSO	PSO1	PSO2	PSO3

**CE010709**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE010709	Seminar	0-0-4:0	2010

**COURSE END SURVEY - CE010709 - Seminar****CO->PO MAPPING - CE010709 - Seminar**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

**CO->PSO MAPPING - CE010709 - Seminar**

CO/PSO	PSO1	PSO2	PSO3

**COURSE->PO MAPPING - CE010709 - Seminar**

CE010709/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

**COURSE->PSO MAPPING - CE010709 - Seminar**

CE010709/PSO	PSO1	PSO2	PSO3

**CE010606L05**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE010606L05	Concrete Technology	4-0-0:4	2010

**COURSE END SURVEY - CE010606L05 - Concrete Technology****CO->PO MAPPING - CE010606L05 - Concrete Technology**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

**CO->PSO MAPPING - CE010606L05 - Concrete Technology**

CO/PSO	PSO1	PSO2	PSO3

**COURSE->PO MAPPING - CE010606L05 - Concrete Technology**

CE010606L05/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

**COURSE->PSO MAPPING - CE010606L05 - Concrete Technology**

CE010606L05/PSO	PSO1	PSO2	PSO3

**CS010703**

Course Code	Course Name	L-T-P:C	Year of Introduction
CS010703	Design of Concrete Structures I	4-0-0:4	2010

**COURSE END SURVEY - CS010703 - Design of Concrete Structures I****CO->PO MAPPING - CS010703 - Design of Concrete Structures I**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

**CO->PSO MAPPING - CS010703 - Design of Concrete Structures I**

CO/PSO	PSO1	PSO2	PSO3

**COURSE->PO MAPPING - CS010703 - Design of Concrete Structures I**

CS010703/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

**COURSE->PSO MAPPING - CS010703 - Design of Concrete Structures I**

CS010703/PSO	PSO1	PSO2	PSO3

**CS010704**

Course Code	Course Name	L-T-P:C	Year of Introduction
CS010704	ARCHITECTURE AND TOWN PLANNING	4-0-0:4	2010

**COURSE END SURVEY - CS010704 - ARCHITECTURE AND TOWN PLANNING**  
**CO->PO MAPPING - CS010704 - ARCHITECTURE AND TOWN PLANNING**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
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**CO->PSO MAPPING - CS010704 - ARCHITECTURE AND TOWN PLANNING**

CO/PSO	PSO1	PSO2	PSO3
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**COURSE->PO MAPPING - CS010704 - ARCHITECTURE AND TOWN PLANNING**

CS010704/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

**COURSE->PSO MAPPING - CS010704 - ARCHITECTURE AND TOWN PLANNING**

CS010704/PSO	PSO1	PSO2	PSO3

**CE010703**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE010703	Design of Concrete Structures II	4-0-0:4	2010

**COURSE END SURVEY - CE010703 - Design of Concrete Structures II**  
**CO->PO MAPPING - CE010703 - Design of Concrete Structures II**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
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**CO->PSO MAPPING - CE010703 - Design of Concrete Structures II**

CO/PSO	PSO1	PSO2	PSO3
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**COURSE->PO MAPPING - CE010703 - Design of Concrete Structures II**

CE010703/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

**COURSE->PSO MAPPING - CE010703 - Design of Concrete Structures II**

CE010703/PSO	PSO1	PSO2	PSO3

**CE010706**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE010706	Prestressed Concrete	4-0-0:4	2010

**COURSE END SURVEY - CE010706 - Prestressed Concrete**  
**CO->PO MAPPING - CE010706 - Prestressed Concrete**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
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**CO->PSO MAPPING - CE010706 - Prestressed Concrete**

CO/PSO	PSO1				PSO2				PSO3			
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**COURSE->PO MAPPING - CE010706 - Prestressed Concrete**

CE010706/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

**COURSE->PSO MAPPING - CE010706 - Prestressed Concrete**

CE010706/PSO	PSO1				PSO2				PSO3			

**CE010706**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE010706	Prestressed Concrete	4-0-0:4	2010

**COURSE END SURVEY - CE010706 - Prestressed Concrete****CO->PO MAPPING - CE010706 - Prestressed Concrete**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
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**CO->PSO MAPPING - CE010706 - Prestressed Concrete**

CO/PSO	PSO1				PSO2				PSO3			
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**COURSE->PO MAPPING - CE010706 - Prestressed Concrete**

CE010706/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

**COURSE->PSO MAPPING - CE010706 - Prestressed Concrete**

CE010706/PSO	PSO1				PSO2				PSO3			

**PR**

Course Code	Course Name	L-T-P:C	Year of Introduction
PR	Project	0-0-4:0	2010

**COURSE END SURVEY - PR - Project****CO->PO MAPPING - PR - Project**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
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**CO->PSO MAPPING - PR - Project**

CO/PSO	PSO1				PSO2				PSO3			
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**COURSE->PO MAPPING - PR - Project**

PR/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

**COURSE->PSO MAPPING - PR - Project**

PR/PSO	PSO1	PSO2	PSO3

**CE010**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE010	Seminar	0-0-4:0	2010

**COURSE END SURVEY - CE010 - Seminar****CO->PO MAPPING - CE010 - Seminar**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

**CO->PSO MAPPING - CE010 - Seminar**

CO/PSO	PSO1	PSO2	PSO3

**COURSE->PO MAPPING - CE010 - Seminar**

CE010/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

**COURSE->PSO MAPPING - CE010 - Seminar**

CE010/PSO	PSO1	PSO2	PSO3

**CE010707**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE010707	Computer Applications Lab	0-0-4:0	2010

**COURSE END SURVEY - CE010707 - Computer Applications Lab****CO->PO MAPPING - CE010707 - Computer Applications Lab**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

**CO->PSO MAPPING - CE010707 - Computer Applications Lab**

CO/PSO	PSO1	PSO2	PSO3

**COURSE->PO MAPPING - CE010707 - Computer Applications Lab**

CE010707/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

**COURSE->PSO MAPPING - CE010707 - Computer Applications Lab**

CE010707/PSO	PSO1	PSO2	PSO3

**CE401**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE401	Design of Steel Structures	4-0-0:4	2016

No.	Course Outcome - CE401 - Design of Steel Structures	Target
CO1	Design bolted and welded connections	68%
CO2	Design tension members using IS specifications	68%
CO3	Design columns under axial loads using IS specifications	68%
CO4	Design beams and plate girders	68%
CO5	Evaluate loads on truss and design purlins	68%
CO6	Design structural components using timber	68%

**COURSE END SURVEY - CE401 - Design of Steel Structures**

Sl.No	Questions & Options
CO1	To what extend you are able to Design bolted and welded connections
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO2	To what extend you are able to Design tension members and beams using the IS specifications
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO3	To what extend you are able to Design columns under axial loads using IS specifications
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO4	To what extend you are able to Design beams and plate girders
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO5	To what extend you are able to Evaluate loads on truss and design purlins
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO6	To what extend you are able to Design structural components using timber.
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>

**CO->PO MAPPING - CE401 - Design of Steel Structures**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2				1	2				2

CO2	3	3	3			3	1	3				2
CO3	3	3	3	2		3	1	3				2
CO4	3	3	2	2			1	2				2
CO5	3	3	2	2			1	2				2
CO6	2	3	2	2			1	2				1

**CO->PSO MAPPING - CE401 - Design of Steel Structures**

CO/PSO	PSO1	PSO2	PSO3
CO1	3	3	2
CO2	3	3	2
CO3	3	3	2
CO4	3	3	2
CO5	3	3	2
CO6	3	3	2

**COURSE->PO MAPPING - CE401 - Design of Steel Structures**

CE401/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	3	3	2		3	1	3				2

**COURSE->PSO MAPPING - CE401 - Design of Steel Structures**

CE401/PSO	PSO1	PSO2	PSO3
	3	3	2

**CE403**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE403	Structural Analysis- III	3-0-0:3	2016

No.	Course Outcome - CE403 - Structural Analysis- III	Target
CO1	Analyze structures under lateral and vertical loads using approximate method	52%
CO2	Analyze plane truss, beams plane frame using flexibility matrix method	52%
CO3	Analyze plane truss, beams, plane frame using stiffness method	52%
CO4	Solve continuous beam and frame using direct stiffness method	52%
CO5	Establish the equations of motion in structural dynamics and determine structural response from dynamic loads	52%

**COURSE END SURVEY - CE403 - Structural Analysis- III**

Sl.No	Questions & Options
CO1	To what extend are you capable of analyzing structures under lateral and vertical loads?
	Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>
CO2	To what extend are you capable of analyzing plane truss, plane frame using flexibility method?
	Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>
CO3	To what extend are you capable of analyzing plane truss, plane frame using stiffness method?
	Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>
CO4	To what extend are you capable of solving continuous beam and frame using direct stiffness method?
	Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>
CO5	To what extend are you capable of determining the response of a structure under dynamic loads?
	Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>

**CO->PO MAPPING - CE403 - Structural Analysis- III**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3		1					1		2
CO2	3	3	3		1					1		2
CO3	3	3	3		1					1		2
CO4	3	3	3		1					1		2
CO5	3	3	3		1					1		2

**CO->PSO MAPPING - CE403 - Structural Analysis- III**

CO/PSO	PSO1	PSO2	PSO3
CO1	3		1
CO2	3		1
CO3	3		1
CO4	3		1
CO5	3		1

**COURSE->PO MAPPING - CE403 - Structural Analysis- III**

CE403/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	3	3		1					1		2

**COURSE->PSO MAPPING - CE403 - Structural Analysis- III**

CE403/PSO	PSO1	PSO2	PSO3
	3		1

**CE405**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE405	Environmental Engineering- I	3-0-0:3	2016

No.	Course Outcome - CE405 - Environmental Engineering- I	Target
CO1	Forecast the population and design water supply schemes.	70%
CO2	Identify the various constituents present in a water sample.	70%
CO3	Demonstrate water quality concepts and their effect on treatment process selection.	70%
CO4	Identify different treatment units in a water treatment plant and formulate their design procedures	70%
CO5	Design various water distribution network systems.	70%

**COURSE END SURVEY - CE405 - Environmental Engineering- I**

Sl.No	Questions & Options
CO1	To what extend you are able to forecast the population and design water supply schemes.
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO2	To what extend you are able to identify the various constituents present in a water sample.
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO3	To what extend you are able to Demonstrate water quality concepts and their effect on treatment process selection.
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO4	To what extend you are able to Identify different treatment units in a water treatment plant and formulate their design procedures
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO5	To what extend you are able to design various water distribution network systems.
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>

**CO->PO MAPPING - CE405 - Environmental Engineering- I**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2									2
CO2	2	2	2			1						2

CO3	2	2	2									2
CO4	3	2	2				2					2
CO5	3	2	2				2	2				2

**CO->PSO MAPPING - CE405 - Environmental Engineering- I**

CO/PSO	PSO1	PSO2	PSO3
CO1	3	1	
CO2	2	1	2
CO3	2	2	1
CO4	3	3	2
CO5	3	3	2

**COURSE->PO MAPPING - CE405 - Environmental Engineering- I**

CE405/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	2	2			1	2	2				2

**COURSE->PSO MAPPING - CE405 - Environmental Engineering- I**

CE405/PSO	PSO1	PSO2	PSO3
	3	3	2

**CE407**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE407	Transportation Engineering -II	3-0-0:3	2016

No.	Course Outcome - CE407 - Transportation Engineering -II	Target
CO1	Demonstrate the basics and design of various rail components and their functioning	62.5%
CO2	Recognize the types and functions of track, junctions and railway stations	62.5%
CO3	Describe the operation, control and maintenance of railways	62.5%
CO4	Identify the various components of a tunnel and methods of tunnel construction	62.5%
CO5	Classify harbours, docks and breakwaters based on their functioning	62.5%

**COURSE END SURVEY - CE407 - Transportation Engineering -II**

Sl.No	Questions & Options
CO1	To what extend you are able to demonstrate the basics and design of various rail components and their functioning

	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO2	To what extend you are able to recognize the types and functions of track, junctions and railway stations
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO3	To what extend you are able to describe the operation, control and maintenance of railways
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO4	To what extend your are able to identify the various components of a tunnel and methods of tunnel construction
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO5	To what extend you are able to classify harbours, docks and breakwaters based on their functioning
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>

**CO->PO MAPPING - CE407 - Transportation Engineering -II**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	1			2	2					2
CO2	3	1	1			2						2
CO3	3	2	2			2						2
CO4	3	2	1			2	2					2
CO5	3	2	2			2	2					2

**CO->PSO MAPPING - CE407 - Transportation Engineering -II**

CO/PSO	PSO1	PSO2	PSO3
CO1	2	2	2
CO2	2	2	2
CO3	2	2	2
CO4	2	2	2
CO5	1	2	2

**COURSE->PO MAPPING - CE407 - Transportation Engineering -II**

CE407/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	2	2			2	2					2

**COURSE->PSO MAPPING - CE407 - Transportation Engineering -II**

CE407/PSO	PSO1	PSO2	PSO3
	2	2	2

## CE409

Course Code	Course Name	L-T-P:C	Year of Introduction
CE409	Quantity Surveying and Valuation	3-0-0:3	2016

No.	Course Outcome - CE409 - Quantity Surveying and Valuation	Target
CO1	Prepare detailed estimates and abstracts for various items of work in both building and road construction	55%
CO2	Prepare estimates and bar bending schedules for R.C.C. works connected with building construction and minor irrigation works	55%
CO3	Develop specifications for common materials of construction and various items of work.	55%
CO4	Analyze the rates for different items of works based on material and workmanship.	55%
CO5	Perform the valuation of land and buildings, and develop an ability to solve the problems in the same realm.	55%

**COURSE END SURVEY - CE409 - Quantity Surveying and Valuation**

Sl.No	Questions & Options
CO1	To what extent were you able to prepare detailed estimate and abstracts for various items of work in both building and road construction
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO2	To what extent were you able to prepare estimates and bar bending schedules for R.C.C. works connected with building construction and minor irrigation works
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO3	To what extent were you able to develop specification for common materials of construction and its items of work.
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO4	To what extent were you able to analyze the rates for different items of works based on material and workmanship.
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO5	TO what extent were you able to perform the valuation of land and buildings, and develop an ability to solve the problems in the same realm.
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>

**CO->PO MAPPING - CE409 - Quantity Surveying and Valuation**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2							1	1	2
CO2	3	2	2							1	1	2



CO3	3	2	2			3	1	2		2	1	2
CO4	3	2	2			3		2		1	1	2
CO5	3	2	2			3				1	1	2

**CO->PSO MAPPING - CE409 - Quantity Surveying and Valuation**

CO/PSO	PSO1	PSO2	PSO3
CO1	2		1
CO2	2		1
CO3	2	1	1
CO4	2	1	1
CO5	2		1

**COURSE->PO MAPPING - CE409 - Quantity Surveying and Valuation**

CE409/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	2	2			3	1	2		2	1	2

**COURSE->PSO MAPPING - CE409 - Quantity Surveying and Valuation**

CE409/PSO	PSO1	PSO2	PSO3
	2	1	1

**CE467**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE467	Highway Pavement Design	3-0-0:3	2016

No.	Course Outcome - CE467 - Highway Pavement Design	Target
CO1	Identify pavement components and design bituminous mixes	60.5%
CO2	Analyze and design flexible pavements	60.5%
CO3	Analyze and design rigid pavements	55.5%
CO4	Design longitudinal, contraction and expansion joints in cement concrete pavements	55.5%
CO5	Evaluate structural conditions of pavements	55.5%

**COURSE END SURVEY - CE467 - Highway Pavement Design**

Sl.No	Questions & Options
CO1	To what extend you are able to identify pavement components and design bituminous mixes
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>

CO2	To what extend you are able to analyze and design flexible pavements
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO3	To what extend you are able to analyze and design rigid pavements
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO4	To what extend you are able to design longitudinal, contraction and expansion joints in cement concrete pavements
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO5	To what extend you are able to evaluate structural conditions of pavements
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>

**CO->PO MAPPING - CE467 - Highway Pavement Design**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	2									2
CO2	3	3	2									2
CO3	3	3	2									2
CO4	3	3	2									2
CO5	3	2	2	2								1

**CO->PSO MAPPING - CE467 - Highway Pavement Design**

CO/PSO	PSO1	PSO2	PSO3
CO1	3	2	2
CO2	3	2	2
CO3	3	2	2
CO4	3	2	2
CO5	2	2	2

**COURSE->PO MAPPING - CE467 - Highway Pavement Design**

CE467/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	3	2	2								2

**COURSE->PSO MAPPING - CE467 - Highway Pavement Design**

CE467/PSO	PSO1	PSO2	PSO3
	3	2	2

**CE469**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE469	Environmental Impact Assessment	3-0-0:3	2016

No.	Course Outcome - CE469 - Environmental Impact Assessment	Target
CO1	1. Analyze evolution and elements of EIA process	56%
CO2	2. Identify environmental impacts of various pollutants	60%
CO3	3. Determine effects of pollution on various environment resources	57%
CO4	4. Carry out positive and negative environmental impact assessment	57%
CO5	5. Analyze environment management plan with EIA case studies	57%

**COURSE END SURVEY - CE469 - Environmental Impact Assessment**

Sl.No	Questions & Options
CO1	To what extent you are able to analyze evolution and elements of EIA process
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO2	To what extent you are able to identify environmental impacts of various pollutants
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO3	To what extent you are able to determine effects of pollution on various environment resources
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO4	To what extent you are able to carry out positive and negative environmental impact assessment
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO5	To what extent you are able to analyze environment management plan with EIA case studies
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>

**CO->PO MAPPING - CE469 - Environmental Impact Assessment**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	1	3	2		3	3	3			1	2
CO2	1	1	3	2		3	3	3				2
CO3	1	1	3	2		3	3	3				2
CO4	1	1	3	2	1	3	3	3				2
CO5	2	1	3	2	1	3	3	3			1	2

**CO->PSO MAPPING - CE469 - Environmental Impact Assessment**

CO/PSO	PSO1	PSO2	PSO3
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CO1	1	3	2
CO2	1	3	2
CO3	1	3	2
CO4	1	3	2
CO5	1	3	2

**COURSE->PO MAPPING - CE469 - Environmental Impact Assessment**

CE469/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	2	1	3	2	1	3	3	3			1	2

**COURSE->PSO MAPPING - CE469 - Environmental Impact Assessment**

CE469/PSO	PSO1	PSO2	PSO3
	1	3	2

**CE451**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE451	Seminar & Project Preliminary	0-1-4:2	2016

No.	Course Outcome - CE451 - Seminar & Project Preliminary	Target
CO1	Identify and select any topic of interest to civil engineering community.	67%
CO2	Identify and report modern developments in civil engineering.	67%
CO3	Recognize various issues related to professional engineering practice.	68.5%
CO4	Effvely present acquired information using a variety of modern presentation tools.	68.5%
CO5	Communicate effectively in oral and written modes to technical and non-technical audience.	68.5%

**COURSE END SURVEY - CE451 - Seminar & Project Preliminary**

Sl.No	Questions & Options
CO1	To what extent the student can identify and select topic in civil engineering
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO2	In what extent the student can identify and report modern developments in civil engineering
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO3	To what extent you can recognize various issues related to professional engineering practice
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>

CO4	In what extent effectively present information using modern presentation tools
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO5	In what extent communicate effectively in oral and written to technical and nontechnical audience
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>

**CO->PO MAPPING - CE451 - Seminar & Project Preliminary**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	2	3	2	3	2	3	2	3	1
CO2	3	2	2	2	3	2	3	2	3	1	3	3
CO3	3	2	2	2	3	2	3	2	3	2	3	3
CO4	3	2	2	2	3	1	3	2	3	3	3	2
CO5	3	2	2	2	3	1	3	2	3	3	3	2

**CO->PSO MAPPING - CE451 - Seminar & Project Preliminary**

CO/PSO	PSO1	PSO2	PSO3
CO1	2	2	2
CO2	2	2	2
CO3	2	2	2
CO4	2	2	2
CO5	2	2	2

**COURSE->PO MAPPING - CE451 - Seminar & Project Preliminary**

CE451/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	2	2	2	3	2	3	2	3	3	3	3

**COURSE->PSO MAPPING - CE451 - Seminar & Project Preliminary**

CE451/PSO	PSO1	PSO2	PSO3
	2	2	2

**CE431**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE431	Environmental Engineering Lab	0-0-3:1	2016

No.	Course Outcome - CE431 - Environmental Engineering Lab	Target
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CO1	Develop a working knowledge about the laboratory test used for the determination of physical properties of water and waste water	55%
CO2	Develop a working knowledge about the laboratory test used for the determination of chemical properties of water and wastewater	55%
CO3	Develop a working knowledge about the laboratory test used for the determination of biological properties of water and wastewater	55%
CO4	Evaluate the behavior based on lab results and classify water and wastewater as per IS specifications	55%
CO5	Assess the quality of water and wastewater for various purposes	55%

**COURSE END SURVEY - CE431 - Environmental Engineering Lab**

Sl.No	Questions & Options
CO1	To what extend you are able to develop a working knowledge about the laboratory test used for the determination of physical properties of water and waste water
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO2	To what extend you are able to develop a working knowledge about the laboratory test used for the determination of chemical properties of water and wastewater
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO3	To what extend you are able to develop a working knowledge about the laboratory test used for the determination of biological properties of water and wastewater
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO4	To what extend you are able to evaluate the behavior based on lab results and classify water and wastewater as per IS specifications
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO5	To what extend you are able to assess the quality of water and wastewater for various purposes
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>

**CO->PO MAPPING - CE431 - Environmental Engineering Lab**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2				1	3			2	2		
CO2	2				1	3	2		2	2		
CO3	1					3			2	3		
CO4	1	1	1						2	2		
CO5	2	1	2	2			2		2	2		

**CO->PSO MAPPING - CE431 - Environmental Engineering Lab**

CO/PSO	PSO1	PSO2	PSO3
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CO1	1	1	
CO2	1	1	
CO3	2	1	1
CO4	1	1	2
CO5	1	2	2

**COURSE->PO MAPPING - CE431 - Environmental Engineering Lab**

CE431/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	2	1	2	2	1	3	2		2	3		

**COURSE->PSO MAPPING - CE431 - Environmental Engineering Lab**

CE431/PSO	PSO1	PSO2	PSO3
	2	2	2

**CE465**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE465	Geo-Environmental Engineering	3-0-0:3	2016

**COURSE END SURVEY - CE465 - Geo-Environmental Engineering****CO->PO MAPPING - CE465 - Geo-Environmental Engineering**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
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**CO->PSO MAPPING - CE465 - Geo-Environmental Engineering**

CO/PSO	PSO1	PSO2	PSO3
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**COURSE->PO MAPPING - CE465 - Geo-Environmental Engineering**

CE465/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

**COURSE->PSO MAPPING - CE465 - Geo-Environmental Engineering**

CE465/PSO	PSO1	PSO2	PSO3

**SEMESTER-8****CE010801**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE010801	Advanced Structural Design	0-0-0:0	2014

No.	Course Outcome - CE010801 - Advanced Structural Design	Target
CO1	Design Road bridges	50%
CO2	Design special structural elements such as Shell structures	60%
CO3	Interpret Industrial buildings	60%
CO4	Design and illustrate Plate and gantry girders	55%
CO5	Design and familiarize Steel bridges	55%

**COURSE END SURVEY - CE010801 - Advanced Structural Design**

Sl.No	Questions & Options
CO1	To what extent you can design Road bridges
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO2	To what extent you can design special structural elements such as Shell structures
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO3	To what extent you can interpret Industrial buildings
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO4	To what extent you can design and illustrate Plate and gantry girders
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO5	To what extent you can design and familiarize Steel bridges
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>

**CO->PO MAPPING - CE010801 - Advanced Structural Design**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2	1	2	2	2	3	2	2	2
CO2	3	3	2	2	2	2	2	2	3	2	2	2
CO3	3	3	2	2	2	2	2	2	3	2	2	2
CO4	3	3	2	2	2	2	2	2	3	2	2	2
CO5	3	2	2		1	2	2	2		1	2	2

**CO->PSO MAPPING - CE010801 - Advanced Structural Design**

CO/PSO	PSO1	PSO2	PSO3
CO1	3	3	2
CO2	2	2	3
CO3	3	2	3



CO4	3	2	3
CO5	2	2	3

**COURSE->PO MAPPING - CE010801 - Advanced Structural Design**

CE010801/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	3	2	2	2	2	2	2	3	2	2	2

**COURSE->PSO MAPPING - CE010801 - Advanced Structural Design**

CE010801/PSO	PSO1	PSO2	PSO3
	3	3	3

**CE010802**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE010802	Building Technology And Management	0-0-0:0	2014

No.	Course Outcome - CE010802 - Building Technology And Management	Target
CO1	Ability to apply knowledge of mathematics, science, and engineering to calculate the mix design in concrete, load calculation in form work.	55%
CO2	An understanding of the fundamental methods of prefabricated units and production.	50%
CO3	A better understanding of the construction organization and set ups.	55%
CO4	An understanding of the codification and value engineering.	50%
CO5	An understanding of the fundamental rules and regulation of the tender notice and related.	55%
CO6	Ability to solve problems between client and contractor as an arbitrator.	60%

**COURSE END SURVEY - CE010802 - Building Technology And Management**

Sl.No	Questions & Options
CO1	To what extent you are able to apply knowledge of mathematics, science, and engineering to calculate the mix design in concrete, load calculation in form work?
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO2	To what extent you are able to understand the fundamental methods of prefabricated units and production?
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO3	To what extent you are able to understand the construction organization and set ups?
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO4	To what extent you are able to understand the codification and value engineering?
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>

CO5	To what extent you are able to understand the fundamental rules and regulation of the tender notice and related?
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO6	To what extent you are able to solve problems between client and contractor as an arbitrator?
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>

**CO->PO MAPPING - CE010802 - Building Technology And Management**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	3	3							2
CO2	2	1	1	1								2
CO3						3		3	3	3	3	2
CO4						3		3	3	3	3	2
CO5						3		3	3	3	3	2
CO6						3		3	3	3	3	2

**CO->PSO MAPPING - CE010802 - Building Technology And Management**

CO/PSO	PSO1	PSO2	PSO3
CO1	3	3	1
CO2	3	3	1
CO3			1
CO4			1
CO5			1
CO6			1

**COURSE->PO MAPPING - CE010802 - Building Technology And Management**

CE010802/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	3	3	3	3	3		3	3	3	3	2

**COURSE->PSO MAPPING - CE010802 - Building Technology And Management**

CE010802/PSO	PSO1	PSO2	PSO3
	3	3	1

**CE010803**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE010803	Environmental Engineering II	0-0-0:0	2014

No.	Course Outcome - CE010803 - Environmental Engineering II	Target
CO1	Identify different water constituents present in a wastewater sample.	52%
CO2	Identify the various types of treatment methods for wastewater	55%
CO3	Illustrate and design various treatment units in a wastewater treatment plant	54%
CO4	Identify suitable waste water disposal methods for domestic sewage	55%
CO5	Select suitable need-based sanitary fixtures for any civil engineering work.	53%

**COURSE END SURVEY - CE010803 - Environmental Engineering II**

Sl.No	Questions & Options
CO1	To what extend you are able to Identify different water constituents present in a wastewater sample.
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO2	To what extend you are able to identify the various types of treatment methods for wastewater
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO3	To what extend you are able to illustrate and design various treatment units in a wastewater treatment plant
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO4	To what extend you are able to Identify suitable waste water disposal methods for domestic sewage
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO5	To what extend you are able to Select suitable need-based sanitary fixtures for any civil engineering work.
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>

**CO->PO MAPPING - CE010803 - Environmental Engineering II**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	1		1	1		1		2	1
CO2	2	1	1	1		1	3		1		2	1
CO3	2	1	1	1	3	1	3		1		2	1
CO4	2	1	1	1		1	3		1		2	1
CO5	2	2	1	2		1	3		1		2	1

**CO->PSO MAPPING - CE010803 - Environmental Engineering II**

CO/PSO	PSO1	PSO2	PSO3
CO1	2	3	3
CO2	3	1	2
CO3	3	1	2

CO4	3	2	3
CO5	3	2	3

**COURSE->PO MAPPING - CE010803 - Environmental Engineering II**

CE010803/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	2	2	2	3	1	3		1		2	1

**COURSE->PSO MAPPING - CE010803 - Environmental Engineering II**

CE010803/PSO	PSO1	PSO2	PSO3
	3	3	3

**CE010804L05**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE010804L05	Highway and Airfield Pavements	0-0-0:0	2014

No.	Course Outcome - CE010804L05 - Highway and Airfield Pavements	Target
CO1	Identify the pavement components and design bituminous mixes	60%
CO2	Analyze and design of flexible pavements.	60%
CO3	Analyze and design rigid pavements.	50%
CO4	Design longitudinal, contraction and expansion joints in cement concrete pavements.	50%
CO5	Evaluate structural condition of pavement.	60%

**COURSE END SURVEY - CE010804L05 - Highway and Airfield Pavements**

Sl.No	Questions & Options
CO1	To what extent you are able to identify the pavement components and design bituminous mixes
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO2	To what extent you are able to analyze and design of flexible pavements.
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO3	To what extent you are able to analyze and design rigid pavements.
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO4	To what extent you are able to design longitudinal, contraction and expansion joints in cement concrete pavements.
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO5	To what extent you are able to evaluate structural condition of pavement.

Answer Choice- *Excellent/Very Good/Good Satisfactory/Needs improvement*

**CO->PO MAPPING - CE010804L05 - Highway and Airfield Pavements**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1					2						
CO2	2	3	3			2	1	3				
CO3	2	3	3			2	1	3				
CO4	2	3	3			2		3				
CO5	2	2	2	1			3	3			2	

**CO->PSO MAPPING - CE010804L05 - Highway and Airfield Pavements**

CO/PSO	PSO1	PSO2	PSO3
CO1	1		2
CO2	3	1	3
CO3	3	1	3
CO4	3	1	3
CO5	3		2

**COURSE->PO MAPPING - CE010804L05 - Highway and Airfield Pavements**

CE010804L05/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	2	3	3	1		2	3	3			2	

**COURSE->PSO MAPPING - CE010804L05 - Highway and Airfield Pavements**

CE010804L05/PSO	PSO1	PSO2	PSO3
	3	1	3

**CE010805G01**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE010805G01	Finite Element Analysis	0-0-0:0	2014

No.	Course Outcome - CE010805G01 - Finite Element Analysis	Target
CO1	Illustrate basic concepts of finite element applications	60%
CO2	Formulate the design equations for FEM	50%
CO3	Model complex geometry problems using finite element technology	55%
CO4	Solve basic Engineering problems using FEM	55%

CO5	Formulate isoparametric equations for different types of elements	60%
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**COURSE END SURVEY - CE010805G01 - Finite Element Analysis**

Sl.No	Questions & Options
CO1	To what extent you are able to illustrate basic concepts of finite element applications
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO2	To what extent you are able to formulate the design equations for FEM
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO3	To what extent you are able to model complex geometry problems using finite element technology
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO4	To what extent you are able to solve basic Engineering problems using FEM
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO5	To what extent you are able to formulate iso-parametric equations for different types of elements
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>

**CO->PO MAPPING - CE010805G01 - Finite Element Analysis**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	1	2	3					1	1	2
CO2	2	3		2	3				2			
CO3	2	3		2	3				2			
CO4	2	3		2	3	1	1	1	2	1		
CO5	2	3		2	3			1	2			

**CO->PSO MAPPING - CE010805G01 - Finite Element Analysis**

CO/PSO	PSO1	PSO2	PSO3
CO1	3	3	2
CO2		3	1
CO3	2	3	2
CO4	2	3	2
CO5		3	1

**COURSE->PO MAPPING - CE010805G01 - Finite Element Analysis**

CE010805G01/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	3	1	2	3	1	1	1	2	1	1	2

**COURSE->PSO MAPPING - CE010805G01 - Finite Element Analysis**

CE010805G01/PSO	PSO1	PSO2	PSO3
	3	3	2

**CE010805G02**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE010805G02	Environmental Pollution Control Techniques	0-0-0:0	2014

No.	Course Outcome - CE010805G02 - Environmental Pollution Control Techniques	Target
CO1	Identify and analyze the sources and effects of air pollution	55%
CO2	Describe the characteristics of water and the relevant purity standards	50%
CO3	Identify composition of industrial waste and its treatment methods	55%
CO4	Identify composition of solid waste and sources of waste generation	60%
CO5	Identify and analyze the causes and sources of noise pollution and its control	60%

**COURSE END SURVEY - CE010805G02 - Environmental Pollution Control Techniques**

Sl.No	Questions & Options
CO1	To what extent you are able to identify and analyze the sources and effects of air pollution
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO2	To what extent you are able to describe the characteristics of water and the relevant purity standards
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO3	To what extent you are able to identify composition of industrial waste and its treatment methods
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO4	To what extent you are able to identify composition of solid waste and sources of waste generation
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO5	To what extent you are able to identify and analyze the causes and sources of noise pollution and its control
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>

**CO->PO MAPPING - CE010805G02 - Environmental Pollution Control Techniques**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	1			1	2	3		1			1
CO2	1	2	2		2	2	3	1				2
CO3	1	2	2		2	2	3	1				2

CO4	1	1	1		1	1	1	1				2
CO5	1	1				1	1	1				2

**CO->PSO MAPPING - CE010805G02 - Environmental Pollution Control Techniques**

CO/PSO	PSO1	PSO2	PSO3
CO1	1	1	2
CO2	1	1	2
CO3	1	1	2
CO4	1	1	2
CO5	1	1	2

**COURSE->PO MAPPING - CE010805G02 - Environmental Pollution Control Techniques**

CE010805G02/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	1	2	2		2	2	3	1	1			2

**COURSE->PSO MAPPING - CE010805G02 - Environmental Pollution Control Techniques**

CE010805G02/PSO	PSO1	PSO2	PSO3
	1	1	2

**CE010806**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE010806	Environmental Engineering Lab	0-0-0:0	2014

No.	Course Outcome - CE010806 - Environmental Engineering Lab	Target
CO1	Develop a working knowledge about the physical characteristics of water	60%
CO2	Analyze the suspended matters present in water	70%
CO3	Analyze the amount of dissolved oxygen present in water	60%
CO4	Analyze the organic matters present in water	60%
CO5	Analyse the amount of organic and inorganic matters present in water and wastewater	60%
CO6	Develop a practical knowledge in determination of chemical characteristics of water	60%

**COURSE END SURVEY - CE010806 - Environmental Engineering Lab**

Sl.No	Questions & Options
CO1	To what extent you are able to determine the physical characteristics of the water



	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO2	To what extent you are able to analyse the suspended matters present in the water
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO3	To what extent you are able to analyse amount of dissolved oxygen
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO4	To what extent you are able to analyse the organic matters present in water
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO5	To what extent you are able to analyse the amount of organic and inorganic matters present in water and wastewater
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO6	To what extent you are able to analyse the chemical oxygen demand of water
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>

**CO->PO MAPPING - CE010806 - Environmental Engineering Lab**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	2	3	3	3		3			3
CO2	3		2		3							3
CO3		3	2		3			3				3
CO4	3			3	3		2			2		3
CO5	3	3		3	3	3			3			
CO6	3	3	3		3	3		3				3

**CO->PSO MAPPING - CE010806 - Environmental Engineering Lab**

CO/PSO	PSO1	PSO2	PSO3
CO1	3	3	3
CO2	3	3	3
CO3	3	3	3
CO4	3	3	3
CO5	3	3	3
CO6	3	3	3

**COURSE->PO MAPPING - CE010806 - Environmental Engineering Lab**

CE010806/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	3	3	3	3	3	3	3	3	2		3

**COURSE->PSO MAPPING - CE010806 - Environmental Engineering Lab**

CE010806/PSO	PSO1	PSO2	PSO3
	3	3	3

**CE010807**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE010807	PROJECT WORK	0-0-0:0	2014

No.	Course Outcome - CE010807 - PROJECT WORK	Target
CO1	Build professional competence and confidence in students to take up civil engineering assignments.	65%
CO2	Identify the needs and requirements of specific civil engineering task.	60%
CO3	Plan and design the task at hand with the help of appropriate conventional and modern methods/ tools.	60%
CO4	Prepare professional documentation for the work carried out.	60%
CO5	Communicate effectively in oral and written presentations to technical and non technical audience.	65%

**COURSE END SURVEY - CE010807 - PROJECT WORK**

Sl.No	Questions & Options
CO1	To what extent are you able to build professional competence and confidence to take up civil engineering assignments
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO2	To what extent are you able to identify the needs and requirements of specific civil engineering task
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO3	To what extent are you able to plan and design the task at hand with the help of appropriate conventional and modern methods/ tools
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO4	To what extent are you able to prepare professional documentation for the work carried out
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO5	To what extent are you able to communicate effectively in oral and written presentations to technical and non technical audience
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>

**CO->PO MAPPING - CE010807 - PROJECT WORK**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	2	2	3	1	3	2	3	2	3	1

CO2	3	2	2	2	3	1	3	2	3	1	3	3
CO3	3	2	2	2	3	2	3	2	3	2	3	3
CO4	2	2	2	2	3	1	3	2	3	3	3	2
CO5	2	2	2	2	3	1	3	2	3	3	3	2

**CO->PSO MAPPING - CE010807 - PROJECT WORK**

CO/PSO	PSO1	PSO2	PSO3
CO1	2	1	1
CO2	3	2	3
CO3	3	3	3
CO4	3	2	3
CO5	3		3

**COURSE->PO MAPPING - CE010807 - PROJECT WORK**

CE010807/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	2	2	2	3	2	3	2	3	3	3	3

**COURSE->PSO MAPPING - CE010807 - PROJECT WORK**

CE010807/PSO	PSO1	PSO2	PSO3
	3	3	3

**CE492**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE492	Project	0-0-9:6	2016

No.	Course Outcome - CE492 - Project	Target
CO1	Build professional competence and confidence among colleagues to take up civil engineering assignments.	65%
CO2	Identify the needs and requirements of specific civil engineering tasks.	65%
CO3	Plan and design the task at hand with the help of appropriate conventional and modern methods/tools.	65%
CO4	Prepare professional documentation for the work carried out	65%
CO5	Communicate effectively in oral and written modes to a technical and non-technical audience	65%

**COURSE END SURVEY - CE492 - Project**

Sl.No	Questions & Options
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CO1	How far you are confident to take up civil engineering assignments
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO2	Can you identify the needs and requirements of specific civil engineering task
	Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>
CO3	Can you plan and design the task with the help of appropriate conventional and modern methods or tools
	Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>
CO4	Are you able to document the work carried out
	Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>
CO5	Are you communicate effectively in oral and written to a technical and nontechnical audience
	Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>

**CO->PO MAPPING - CE492 - Project**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	2	2	3	2	3	2	3	3	3	1
CO2	3	2	2	2	3	2	3	2	3	2	3	3
CO3	3	2	2	2	3	3	3	2	3	3	3	3
CO4	2	2	2	2	3	2	3	2	3	3	3	2
CO5	2	2	2	2	3	2	3	2	3	3	3	2

**CO->PSO MAPPING - CE492 - Project**

CO/PSO	PSO1	PSO2	PSO3
CO1	2	1	1
CO2	3	2	3
CO3	3	3	3
CO4	3	2	3
CO5	3		3

**COURSE->PO MAPPING - CE492 - Project**

CE492/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	2	2	2	3	3	3	2	3	3	3	3

**COURSE->PSO MAPPING - CE492 - Project**

CE492/PSO	PSO1	PSO2	PSO3
	3	3	3

**CE402**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE402	Environmental Engineering II	3-0-0:3	2016

No.	Course Outcome - CE402 - Environmental Engineering II	Target
CO1	Identify different wastewater sources and design sewers for these	67%
CO2	Classify the sewer appurtenances and analyse the quality of sewage	67%
CO3	Design and illustrate various treatment units in a wastewater treatment plant	67%
CO4	Design suitable need –based sanitary fixtures for civil engineering work	67%
CO5	Identify suitable sludge treatment techniques and design a sludge digestion tank	67%

**COURSE END SURVEY - CE402 - Environmental Engineering II**

Sl.No	Questions & Options
CO1	To what extend you are able to identify different wastewater sources and design the sewers
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO2	To what extend you are able to understand the sewer appurtenances and analyse the quality of sewage
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO3	To what extend you are able to illustrate and design various treatment units in a wastewater treatment plant
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO4	To what extend you are able to design suitable need –based sanitary fixtures for civil engineering work
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO5	To what extend you are able to Identify suitable sludge treatment techniques and design the sludge digestion tank
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>

**CO->PO MAPPING - CE402 - Environmental Engineering II**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	3				2					1
CO2	2	2	2				2					
CO3	3	2	3				2	2		1		1
CO4	1		3				2	2				1
CO5	3	1	3				2			1		1

**CO->PSO MAPPING - CE402 - Environmental Engineering II**

CO/PSO	PSO1	PSO2	PSO3
CO1	3	3	
CO2	2	2	2
CO3	3	3	
CO4	3	3	
CO5	3	3	

**COURSE->PO MAPPING - CE402 - Environmental Engineering II**

CE402/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	2	3				2	2		1		1

**COURSE->PSO MAPPING - CE402 - Environmental Engineering II**

CE402/PSO	PSO1	PSO2	PSO3
	3	3	2

**CE474**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE474	Municipal Solid Waste Management	3-0-0:3	2016

No.	Course Outcome - CE474 - Municipal Solid Waste Management	Target
CO1	Identify and categorize different sources of solid wastes.	60%
CO2	Analyze the quantity and quality of solid wastes generated by a community of people	60%
CO3	Demonstrate the various methods available for the collection, processing and disposal of solid wastes.	60%
CO4	Identify and apply appropriate techniques for solid waste management.	60%
CO5	Explain the adverse effects of an increase in solid wastes	60%

**COURSE END SURVEY - CE474 - Municipal Solid Waste Management**

Sl.No	Questions & Options
CO1	Are you capable of identify and categorize solid wastes.
	Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>
CO2	Are you able to analyze the quantity and quality of solid wastes generated by a community of people.
	Answer Choice- <i>Very frequently/Frequently/Rarely Very rarely/Never</i>

CO3	Are you able to explain the various methods available for the collection, processing and disposal of solid wastes.
	Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>
CO4	Are you able to Identify and apply appropriate techniques for solid waste management.
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO5	Are you able to explain the adverse effects of an increase in solid wastes
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>

**CO->PO MAPPING - CE474 - Municipal Solid Waste Management**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	3	2	2		3						2
CO2	2	3	2	3		3						2
CO3	2	3	2	3		3	3					2
CO4	2	3	2	3		3	2					2
CO5	3	1	1	1		3					1	2

**CO->PSO MAPPING - CE474 - Municipal Solid Waste Management**

CO/PSO	PSO1	PSO2	PSO3
CO1	2		2
CO2	2		2
CO3	2	2	2
CO4	2	2	2
CO5	2		2

**COURSE->PO MAPPING - CE474 - Municipal Solid Waste Management**

CE474/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	3	2	3		3	3				1	2

**COURSE->PSO MAPPING - CE474 - Municipal Solid Waste Management**

CE474/PSO	PSO1	PSO2	PSO3
	2	2	2

**CE482**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE482	Environmental Impact Assessment	3-0-0:3	2016

No.	Course Outcome - CE482 - Environmental Impact Assessment	Target
CO1	Identify various sources of pollution and its effects	60%
CO2	Determine effects of pesticide pollution on various environment resources	60%
CO3	Identify environmental impacts due to various pollutants	60%
CO4	Access positive and negative environmental impact assessment	60%
CO5	Analyze eia procedure with case studies	60%

**COURSE END SURVEY - CE482 - Environmental Impact Assessment**

Sl.No	Questions & Options
CO1	CO2
CO3	CO4
CO5	

**CO->PO MAPPING - CE482 - Environmental Impact Assessment**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	1	3	1		3	3	3				2
CO2	1	1	3	1		3	3	3				2
CO3	1	1	3	1		3	3	3				2
CO4	1	1	3	1		3	3	3			1	2
CO5	2	1	3			3	3	3			1	2

**CO->PSO MAPPING - CE482 - Environmental Impact Assessment**

CO/PSO	PSO1	PSO2	PSO3
CO1	1	3	2
CO2	1	3	2
CO3	1	3	2
CO4	1	3	2
CO5	1	3	3

**COURSE->PO MAPPING - CE482 - Environmental Impact Assessment**

CE482/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	2	1	3	1		3	3	3			1	2

**COURSE->PSO MAPPING - CE482 - Environmental Impact Assessment**

	PSO1	PSO2	PSO3



CE482/PSO	1	3	3
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**CE488**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE488	Disaster Management	3-0-0:3	2016

No.	Course Outcome - CE488 - Disaster Management	Target
CO1	Recognise the fundamental concepts of hazards and disasters.	55%
CO2	Examine the nature and effect of natural disasters and anthropogenic disasters on environment.	55%
CO3	Recognise types of natural and anthropogenic disasters.	55%
CO4	Identify earth as a system and recognise types and impact of pollution.	55%
CO5	Apply disaster management plans for flood and tidal waves.	55%

**COURSE END SURVEY - CE488 - Disaster Management**

Sl.No	Questions & Options
CO1	how efficient are you in stating and recalling the fundamental concepts of hazards and disasters?
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO2	Are you able to Examine the nature and effect of natural disasters and anthropogenic disasters on environment?
	Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>
CO3	can you Recognise types of natural and anthropogenic disasters?
	Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>
CO4	Are you able to Identify earth as a system and recognise types and impact of pollution?
	Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>
CO5	Can you Apply disaster management plans for flood and tidal waves?
	Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>

**CO->PO MAPPING - CE488 - Disaster Management**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1		2	2	2		2						3
CO2	3	2	2	2	2	3	1	2	2	3	1	2
CO3	3	2	1	1	1	1	2			1	1	2
CO4	3	3	3	3	2	3	3	2	2	3	2	2

CO5	3	3	3	3	3	3	3	3	3		3	2
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**CO->PSO MAPPING - CE488 - Disaster Management**

CO/PSO	PSO1	PSO2	PSO3
CO1		3	1
CO2	3	2	3
CO3	3	2	3
CO4	3	2	3
CO5	3	2	3

**COURSE->PO MAPPING - CE488 - Disaster Management**

CE488/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	3	3	3	3	3	3	3	3	3	3	3

**COURSE->PSO MAPPING - CE488 - Disaster Management**

CE488/PSO	PSO1	PSO2	PSO3
	3	3	3

**CE404**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE404	Civil Engineering Project Management	3-0-0:3	2016

No.	Course Outcome - CE404 - Civil Engineering Project Management	Target
CO1	Recognize the importance of planning and scheduling for effective civil engineering project management	66%
CO2	Apply the principles of management for resource management in construction project to save time and reduce cost	66%
CO3	Modify the inventory management system and adopt budget principle based on construction site conditions	66%
CO4	Design suitable construction project contracts that could minimize confusions and disputes with proper budget	66%
CO5	Implement ethical practices in construction sites using industry standards with MIS system	66%
CO6	manage materials in construction field and familiarise safety practises and quality procedures	66%

**COURSE END SURVEY - CE404 - Civil Engineering Project Management**

Sl.No	Questions & Options
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CO1	how much Recognize the importance of planing and scheduling for effective civil engineering project management
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO2	how much Apply the principles of management for resource management in construction project to save time and reduce cost
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO3	on a scale of one to five, five being the highest, how much Apply the principles of management for resource management in construction project to save time and reduce cost
	Answer Choice- <i>5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5</i>
CO4	how confident are you in applying Design suitable construction project contracts that could minimize confusions and disputes
	Answer Choice- <i>Very high degree/High Degree/Moderate degree/Small Degree/Not at all</i>
CO5	how familiarised are you about the concepts Implement ethical practices in construction sites using industry standards
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO6	how much knowledge have you acquired about managing materials giving due consideration to the safety practices in construction?
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>

**CO->PO MAPPING - CE404 - Civil Engineering Project Management**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	2	2	1	3	1	1		1	2	2	
CO2	3	2	2	1	3		2		1	2	2	
CO3	1	2	2	1	3	1	2		1	1	2	
CO4	2		2	1	3	2		3	2	2	2	
CO5	1		2	1		2		2	1		2	
CO6	2		2	1		1	2				2	

**CO->PSO MAPPING - CE404 - Civil Engineering Project Management**

CO/PSO	PSO1	PSO2	PSO3
CO1	3	3	2
CO2	3	3	2
CO3	2	3	2
CO4	2	2	2
CO5	2	2	2

CO6	2	2	1
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**COURSE->PO MAPPING - CE404 - Civil Engineering Project Management**

CE404/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	3	2	2	1	3	2	2	3	2	2	2	

**COURSE->PSO MAPPING - CE404 - Civil Engineering Project Management**

CE404/PSO	PSO1	PSO2	PSO3
	3	3	2

**CE462**

Course Code	Course Name	L-T-P:C	Year of Introduction
CE462	Town and Country Planning	3-0-0:3	2016

No.	Course Outcome - CE462 - Town and Country Planning	Target
CO1	.Identify and understand the various components of planning at neighbourhood, city, regional and national levels	55%
CO2	Understand various theories of urbanization	55%
CO3	Develop an idea about Urban Structure and its Characteristics	55%
CO4	Understand the Concept of New Towns	55%
CO5	Familiarise with Town Development Plan	55%

**COURSE END SURVEY - CE462 - Town and Country Planning**

Sl.No	Questions & Options
CO1	to what extent you are able to Identify and understand the various components of planning at neighbourhood, city, regional and national levels Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>
CO2	To what extent can you Understand various theories of urbanization Answer Choice- <i>Very frequently/Frequently/Rarely Very rarely/Never</i>
CO3	To what extent are you able to Develop an idea about Urban Structure and its Characteristics Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>
CO4	To what extent can you Understand the Concept of New Towns Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>
CO5	To what extent are you able to Familiarise with Town Development Plan

Answer Choice- *Always/Very often/Sometimes/Rarely/Never*

**CO->PO MAPPING - CE462 - Town and Country Planning**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	1	2	2		2	2					1
CO2	1		2			2	2					1
CO3	1		2			2	2					1
CO4	1	1	2			2	2					2
CO5	2	2	2	2	1	1	2	2	2	2		2

**CO->PSO MAPPING - CE462 - Town and Country Planning**

CO/PSO	PSO1	PSO2	PSO3
CO1		2	
CO2		2	
CO3		2	
CO4	1	2	
CO5	2	2	2

**COURSE->PO MAPPING - CE462 - Town and Country Planning**

CE462/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	2	2	2	2	1	2	2	2	2	2		2

**COURSE->PSO MAPPING - CE462 - Town and Country Planning**

CE462/PSO	PSO1	PSO2	PSO3
	2	2	2

**M.Tech-Struct Engg & Construction Management**
**SEMESTER-1**
**04CE6401**

Course Code	Course Name	L-T-P:C	Year of Introduction
04CE6401	Analytical methods in Engineering	3-1-0:4	2016

No.	Course Outcome - 04CE6401 - Analytical methods in Engineering	Target
CO1	Analyze the model by selecting and applying a suitable mathematical method	62%

CO2	Interpreting the mathematical results in physical or other terms to see what it practically means and implies	62%
CO3	Analyze and design engineering situations and solve problems using algebraic methods	62%
CO4	Interpret the solutions of boundary value problems in an engineering concept	62%
CO5	Analyze finite difference approximations to solve partial differential equations	62%
CO6	Recognize the importance of numerical analysis for solving a well-proposed mathematical problem	62%

**COURSE END SURVEY - 04CE6401 - Analytical methods in Engineering**

Sl.No	Questions & Options
CO1	How far you have been able to analyze the model by applying mathematical methods
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO2	How far you have been able to interpret the mathematical results in physical terms
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO3	How far you have been able to solve problems using algebraic methods
	Answer Choice- <i>Very frequently/Frequently/Rarely Very rarely/Never</i>
CO4	How far have you been able to Interpret the solutions of boundary value problems
	Answer Choice- <i>Very frequently/Frequently/Rarely Very rarely/Never</i>
CO5	How far have you been able to analyze finite difference approximations to solve partial differential equations
	Answer Choice- <i>Very frequently/Frequently/Rarely Very rarely/Never</i>
CO6	How far have you been able to recognize the importance of numerical analysis for solving a well-proposed mathematical problems.
	Answer Choice- <i>Very frequently/Frequently/Rarely Very rarely/Never</i>

**CO->PO MAPPING - 04CE6401 - Analytical methods in Engineering**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	2	1									
CO2	2	1									
CO3	2	1									
CO4	2	1									
CO5	2	1									
CO6	2	1									

**CO->PSO MAPPING - 04CE6401 - Analytical methods in Engineering**

CO/PSO	PSO1	PSO2
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CO1	2	
CO2	2	
CO3	2	
CO4	2	
CO5	3	
CO6	3	

**COURSE->PO MAPPING - 04CE6401 - Analytical methods in Engineering**

04CE6401/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
	2	1									

**COURSE->PSO MAPPING - 04CE6401 - Analytical methods in Engineering**

04CE6401/PSO	PSO1	PSO2
	3	

**04CE6403**

Course Code	Course Name	L-T-P:C	Year of Introduction
04CE6403	Theory of Elasticity	3-1-0:4	2016

No.	Course Outcome - 04CE6403 - Theory of Elasticity	Target
CO1	The Students shall be able to analyse solid mechanics problems using concepts of stress, strain and strain theory.	65.2%
CO2	The Students shall be able to interpret the use of plane stress and strains and compatibility conditions to problems.	65.2%
CO3	The Students shall be able to understand the concepts of Airy's stress function and biharmonic equilibrium.	65.2%
CO4	The Students shall be able to analyse axisymmetric problems and understand the stress distribution	65.2%
CO5	The Students shall be able to identify and apply St.Venants method and Prandtl's analogy to various torsion problems	65.2%

**COURSE END SURVEY - 04CE6403 - Theory of Elasticity**

Sl.No	Questions & Options
CO1	To what extent the Students shall be able to analyse solid mechanics problems using concepts of stress, strain and strain theory.
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>

CO2	To what extent the Students shall be able to interpret the use of plane stress and strains and compatibility conditions to problems.	To what extent the Students shall be able to analyse axisymmetric problems and undertand the stress distribution
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>	
CO3	CO4	
Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>		
CO5		
CO5	To what extent the Students shall be able to Identify and apply St.Venants method and Prandtl's analogy to various torsion problems	
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>	

**CO->PO MAPPING - 04CE6403 - Theory of Elasticity**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	1	2								
CO2	3	1	2								
CO3	3	1	2								
CO4	3	1	2								
CO5	3	1	2								

**CO->PSO MAPPING - 04CE6403 - Theory of Elasticity**

CO/PSO	PSO1	PSO2
CO1	3	
CO2	3	
CO3	3	
CO4	3	
CO5	3	

**COURSE->PO MAPPING - 04CE6403 - Theory of Elasticity**

04CE6403/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
	3	1	2								

**COURSE->PSO MAPPING - 04CE6403 - Theory of Elasticity**

04CE6403/PSO	PSO1	PSO2



3

**04CE6405**

Course Code	Course Name	L-T-P:C	Year of Introduction
04CE6405	Construction Management	3-0-0:3	2016

No.	Course Outcome - 04CE6405 - Construction Management	Target
CO1	Memorise popular personalities, definitions, formulas in the field of construction management	61%
CO2	Analyse an organization/project and suggest improvements	61%
CO3	Cooperate with an IT team to work towards an efficient MIS	61%
CO4	Make purchase decisions in an organisation based on the financial aspect	61%
CO5	Evaluate or create a project schedule	61%

**COURSE END SURVEY - 04CE6405 - Construction Management**

Sl.No	Questions & Options
CO1	Do you know the popular personalities, definitions, formulas in the field of construction management
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO2	How do you rate your capability to analyse an organization/project and suggest improvements
	Answer Choice- Excellent/Very Good/Good/Fair/Poor
CO3	How do you rate your capability to cooperate with an IT team to work towards an efficient MIS
	Answer Choice- Excellent/Very Good/Good/Fair/Poor
CO4	How do you rate your capability to make purchase decisions in an organisation based on the financial aspect
	Answer Choice- Excellent/Very Good/Good/Fair/Poor
CO5	How do you rate your capability to evaluate or create a project schedule
	Answer Choice- Excellent/Very Good/Good/Fair/Poor

**CO->PO MAPPING - 04CE6405 - Construction Management**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	1	2	1		1	2	2	3	2	1
CO2	3	3	3	2	3	3	3	3	2	1	3
CO3	2	3	3	2	3	3	3	3	2	1	2
CO4	2	3	3	2	2	3	3	3	2	2	3

CO5	2	3	3	2	3	3	3	3	1	1	2
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**CO->PSO MAPPING - 04CE6405 - Construction Management**

CO/PSO	PSO1	PSO2
CO1	1	2
CO2		2
CO3	3	1
CO4		1
CO5	1	

**COURSE->PO MAPPING - 04CE6405 - Construction Management**

04CE6405/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
	3	3	3	2	3	3	3	3	3	2	3

**COURSE->PSO MAPPING - 04CE6405 - Construction Management**

04CE6405/PSO	PSO1	PSO2
	3	2

**04CE6407**

Course Code	Course Name	L-T-P:C	Year of Introduction
04CE6407	Advanced Design of Concrete Structures	3-0-0:3	2016

No.	Course Outcome - 04CE6407 - Advanced Design of Concrete Structures	Target
CO1	1. To design Reinforced cement concrete structural elements.	50%
CO2	2. To analyse the possible deflection and crack formation that can occur in various structures.	50%
CO3	3. To carry out new methodologies in slab design in plastic stage.	51%
CO4	4. To analyse the building for horizontal loads manually along with inelastic behavior of concrete members	51%
CO5	5. To study the fire resistance, ductility property of structural members along with quality control of concrete.	51%

**COURSE END SURVEY - 04CE6407 - Advanced Design of Concrete Structures**

Sl.No	Questions & Options
CO1	how much confident you are to design Reinforced cement concrete structural elements like beam, deep beam, column, etc.?
	Answer Choice- <i>Very high degree/High Degree/Moderate degree/Small Degree/Not at all</i>

CO2	Are you confident in computing crack width and deflections in rcc beams and one way slabs?
	Answer Choice- <i>Very high degree/High Degree/Moderate degree/Small Degree/Not at all</i>
CO3	Was the discussion on Yield line theory and Hillerborg's strip method found useful?
	Answer Choice- <i>Very high degree/High Degree/Moderate degree/Small Degree/Not at all</i>
CO4	You are now capable of analyzing building frames for lateral loads by portal and cantilever methods. Agree?
	Answer Choice- <i>Strongly Agree/Agree/Neutral Disagree/Strongly disagree</i>
CO5	Are the portions discussing fire resistance and ductility felt to be useful for your professional practice?
	Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>

**CO->PO MAPPING - 04CE6407 - Advanced Design of Concrete Structures**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	2									
CO2	3	2									
CO3	3	2									
CO4	3	2									
CO5	2	3	2								

**CO->PSO MAPPING - 04CE6407 - Advanced Design of Concrete Structures**

CO/PSO	PSO1	PSO2
CO1	3	
CO2	3	
CO3	3	
CO4	2	
CO5	1	2

**COURSE->PO MAPPING - 04CE6407 - Advanced Design of Concrete Structures**

04CE6407/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
	3	3	2								

**COURSE->PSO MAPPING - 04CE6407 - Advanced Design of Concrete Structures**

04CE6407/PSO	PSO1	PSO2
	3	2

04CE6413

Course Code	Course Name	L-T-P:C	Year of Introduction
04CE6413	Construction Planning, Scheduling and Control	3-0-0:3	2016

**COURSE END SURVEY - 04CE6413 - Construction Planning, Scheduling and Control****CO->PO MAPPING - 04CE6413 - Construction Planning, Scheduling and Control**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
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**CO->PSO MAPPING - 04CE6413 - Construction Planning, Scheduling and Control**

CO/PSO	PSO1	PSO2
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**COURSE->PO MAPPING - 04CE6413 - Construction Planning, Scheduling and Control**

04CE6413/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11

**COURSE->PSO MAPPING - 04CE6413 - Construction Planning, Scheduling and Control**

04CE6413/PSO	PSO1	PSO2

**04GN6001**

Course Code	Course Name	L-T-P:C	Year of Introduction
04GN6001	Research Methodology	0-2-0:2	2016

No.	Course Outcome - 04GN6001 - Research Methodology	Target
CO1	To get introduced to research philosophy and processes in general.	60%
CO2	To formulate the research problem and prepare research plan	60%
CO3	Got the basic idea of IPR, copyright and patent for the social development	60%
CO4	To apply various numerical /quantitative techniques for data analysis	60%
CO5	To prepare and communicate the research findings effectively with modern tool	60%

**COURSE END SURVEY - 04GN6001 - Research Methodology**

Sl.No	Questions & Options
CO1	to what extent you understand what is research means and its types
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO2	At what confidence level you are able to formulate and prepare research problem and plan
	Answer Choice- <i>Very high degree/High Degree/Moderate degree/Small Degree/Not at all</i>
CO3	what level you understand the importance of IPR Copy right and patent
	Answer Choice- <i>5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5</i>

CO4	at what extent you apply various numerical /quantitative techniques for data analysis
	Answer Choice- <i>Very advanced/Advanced/Proficient/Basic/ Minimal</i>
CO5	how much you are capable of preparing and communicate the research findings effectively with modern tool
	Answer Choice- <i>Very advanced/Advanced/Proficient/Basic/ Minimal</i>

**CO->PO MAPPING - 04GN6001 - Research Methodology**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3		1								
CO2	3	3	3								
CO3	3	3	3								
CO4	3		3								
CO5	3	2	3								

**CO->PSO MAPPING - 04GN6001 - Research Methodology**

CO/PSO	PSO1	PSO2
CO1	3	3
CO2	2	2
CO3	2	2
CO4	1	1
CO5	3	3

**COURSE->PO MAPPING - 04GN6001 - Research Methodology**

04GN6001/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
	3	3	3								

**COURSE->PSO MAPPING - 04GN6001 - Research Methodology**

04GN6001/PSO	PSO1	PSO2
	3	3

**04CE6411**

Course Code	Course Name	L-T-P:C	Year of Introduction
04CE6411	Structural Dynamics	3-0-0:3	2016

No.	Course Outcome - 04CE6411 - Structural Dynamics	Target
CO1	Analyse various types of dynamic problems and understand the basic concepts of vibration	61%

CO2	Understand the different types of vibration and damping	61%
CO3	Analyse and determine responses of dynamic systems to harmonic, impulsive and periodic loading	61%
CO4	Analyse multi degree freedom systems and continuous systems	61%
CO5	Understand approximate methods and apply in dynamic problems	61%

**COURSE END SURVEY - 04CE6411 - Structural Dynamics**

Sl.No	Questions & Options
CO1	To what extend you are able to analyse various types of dynamic problems
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO2	To what extend you are able to analyse different types of vibration and damping
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO3	To what extend you are able to analyse and determine responses of dynamic systems to harmonic, impulsive and periodic loading
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO4	To what extend you are able to analyse multi degree freedom systems and continuous systems
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO5	To what extend you are able to solve dynamic problems using approximate methods
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>

**CO->PO MAPPING - 04CE6411 - Structural Dynamics**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	1	3								
CO2	3	1	3								
CO3	3	1	3								
CO4	3	1	3								
CO5	3	1	3								

**CO->PSO MAPPING - 04CE6411 - Structural Dynamics**

CO/PSO	PSO1	PSO2
CO1	3	1
CO2	3	1
CO3	3	1
CO4	3	1
CO5	3	1

**COURSE->PO MAPPING - 04CE6411 - Structural Dynamics**

04CE6411/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
	3	1	3								

**COURSE->PSO MAPPING - 04CE6411 - Structural Dynamics**

04CE6411/PSO	PSO1	PSO2
	3	1

**04CE6491**

Course Code	Course Name	L-T-P:C	Year of Introduction
04CE6491	Seminar	0-0-2:2	2016

No.	Course Outcome - 04CE6491 - Seminar	Target
CO1	Understand the basic structure of a scientific paper	65%
CO2	Acquire knowledge on latest developments on a specific area of interest	65%
CO3	Download required scientific papers and systematically arrange them using a reference manager	65%
CO4	Understand the gaps in literature on a specific topic	65%
CO5	Write a report based on the papers read	65%

**COURSE END SURVEY - 04CE6491 - Seminar**

Sl.No	Questions & Options
CO1	How do you rate your capability to understand the basic structure of a scientific paper
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO2	How do you rate your capability to acquire knowledge on latest developments on a specific area of interest
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO3	How do you rate your capability to download required scientific papers and systematically arrange them using a reference manager
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO4	How do you rate your capability to understand the gaps in literature on a specific topic
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO5	How do you rate your capabilities to write a report based on the papers read
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>

**CO->PO MAPPING - 04CE6491 - Seminar**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1											
CO2											
CO3											
CO4											
CO5											

**CO->PSO MAPPING - 04CE6491 - Seminar**

CO/PSO	PSO1	PSO2
CO1		
CO2		
CO3		
CO4		
CO5		

**COURSE->PO MAPPING - 04CE6491 - Seminar**

04CE6491/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11

**COURSE->PSO MAPPING - 04CE6491 - Seminar**

04CE6491/PSO	PSO1	PSO2

**04CE6493**

Course Code	Course Name	L-T-P:C	Year of Introduction
04CE6493	Computer Application Lab	0-0-2:1	2016

No.	Course Outcome - 04CE6493 - Computer Application Lab	Target
CO1	Familiarisation with Primavera P6 software	55%
CO2	Familiarisation with STAAD software	50%
CO3	Familiarisation with ETABS software	30%
CO4	Familiarisation with ANSYS Work bench	28%
CO5	Ability to select a suitable tool for a problem	55%

**COURSE END SURVEY - 04CE6493 - Computer Application Lab**



Sl.No	Questions & Options
CO1	Are you familiar with Primavera P6 software
	Answer Choice- <i>Very advanced/Advanced/Proficient/Basic/ Minimal</i>
CO2	Are yo familiar with STAAD
	Answer Choice- <i>Very advanced/Advanced/Proficient/Basic/ Minimal</i>
CO3	Are you familiar with ETABS
	Answer Choice- <i>Very advanced/Advanced/Proficient/Basic/ Minimal</i>
CO4	Are you familiar with ANSYS Workbench
	Answer Choice- <i>Very advanced/Advanced/Proficient/Basic/ Minimal</i>
CO5	How do you rate your capability to select a suitable tool for a problem
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>

**CO->PO MAPPING - 04CE6493 - Computer Application Lab**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	1	3								
CO2	3	1	3								
CO3	3	1	3								
CO4	3	1	3								
CO5	3	1	3								

**CO->PSO MAPPING - 04CE6493 - Computer Application Lab**

CO/PSO	PSO1	PSO2
CO1	3	2
CO2	3	2
CO3	3	2
CO4	3	2
CO5	3	2

**COURSE->PO MAPPING - 04CE6493 - Computer Application Lab**

04CE6493/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
	3	1	3								

**COURSE->PSO MAPPING - 04CE6493 - Computer Application Lab**

	PSO1	PSO2

04CE6493/PSO	3	2
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**04CE6101**

Course Code	Course Name	L-T-P:C	Year of Introduction
04CE6101	Analytical methods in Engineering	4-0-0:4	2016

No.	Course Outcome - 04CE6101 - Analytical methods in Engineering	Target
CO1	Analyze the model by selecting and applying a suitable mathematical method	62%
CO2	Interpreting the mathematical results in physical or other terms to see what it practically means and implies	62%
CO3	Analyze and design engineering situations and solve problems using algebraic methods	62%
CO4	Interpret the solutions of boundary value problems in an engineering concept	62%
CO5	Analyze finite difference approximations to solve partial differential equations	62%
CO6	Recognize the importance of numerical analysis for solving a well-proposed mathematical problem	62%

**COURSE END SURVEY - 04CE6101 - Analytical methods in Engineering**

Sl.No	Questions & Options
CO1	How far you have been able to analyze the model by applying mathematical methods
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO2	How far you have been able to interpret the mathematical results in physical terms
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO3	How far you have been able to solve problems using algebraic methods
	Answer Choice- <i>Very frequently/Frequently/Rarely Very rarely/Never</i>
CO4	How far have you been able to Interpret the solutions of boundary value problems
	Answer Choice- <i>Very frequently/Frequently/Rarely Very rarely/Never</i>
CO5	How far have you been able to analyze finite difference approximations to solve partial differential equations
	Answer Choice- <i>Very frequently/Frequently/Rarely Very rarely/Never</i>
CO6	How far have you been able to recognize the importance of numerical analysis for solving a well-proposed mathematical problems.
	Answer Choice- <i>Very frequently/Frequently/Rarely Very rarely/Never</i>

**CO->PO MAPPING - 04CE6101 - Analytical methods in Engineering**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
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CO1											
CO2											
CO3											
CO4											
CO5											
CO6											

**CO->PSO MAPPING - 04CE6101 - Analytical methods in Engineering**

CO/PSO	PSO1	PSO2
CO1		
CO2		
CO3		
CO4		
CO5		
CO6		

**COURSE->PO MAPPING - 04CE6101 - Analytical methods in Engineering**

04CE6101/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11

**COURSE->PSO MAPPING - 04CE6101 - Analytical methods in Engineering**

04CE6101/PSO	PSO1	PSO2

**SEMESTER-2****04CE6402**

Course Code	Course Name	L-T-P:C	Year of Introduction
04CE6402	Projcet Planning and Implementation	3-1-0:4	2016

No.	Course Outcome - 04CE6402 - Projcet Planning and Implementation	Target
CO1	Prepare and analyse reports by understand the legal procedure used in construction project	65%
CO2	Conduct work study and improve the efficiency of construction activities to improve productivity	65%
CO3	Apply the scientific concepts in human behavior to manage construction groups	65%
CO4	design construction activities to improve the quality of work and workmanship	65%

CO5	Evaluate and design safety practices in construction sites using safety management	65%
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**COURSE END SURVEY - 04CE6402 - Project Planning and Implementation**

Sl.No	Questions & Options
CO1	How confident are you to prepare and analyse reports used in construction projects ?
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO2	How confident are you to conduct work study and improve the efficiency of construction activities
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO3	How confident are you to apply the scientific concepts in human behaviour to manage construction groups
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO4	How confident are you to redesign construction activities to improve the quality of work and workmanship
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO5	How confident are you to evaluate and design safety practices in construction sites ?
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5

**CO->PO MAPPING - 04CE6402 - Project Planning and Implementation**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	3	3	2	1	2	3	3		1	1
CO2	3	3	3	3	3	3	2	3	3	3	3
CO3	3	3	3	3	3	3	3	2	3	2	3
CO4	3	2	3	2	1	1	3		1	2	3
CO5	3	2	3	2	2	1	2	2	1	1	2

**CO->PSO MAPPING - 04CE6402 - Project Planning and Implementation**

CO/PSO	PSO1	PSO2
CO1		2
CO2	3	2
CO3	1	3
CO4	2	2
CO5	2	3

**COURSE->PO MAPPING - 04CE6402 - Project Planning and Implementation**

04CE6402/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
	3	3	3	3	3	3	3	3	3	3	3

**COURSE->PSO MAPPING - 04CE6402 - Project Planning and Implementation**

04CE6402/PSO	PSO1	PSO2
	3	3

**04CE6404**

Course Code	Course Name	L-T-P:C	Year of Introduction
04CE6404	Finite Element Analysis	3-0-0:3	2016

No.	Course Outcome - 04CE6404 - Finite Element Analysis	Target
CO1	Possess a good understanding of the theoretical basis of General procedure of FEA	55%
CO2	Perform finite element formulations for simple engineering problems	55%
CO3	Derive shape functions using different methods	55%
CO4	Derive stiffness matrix for various elements	55%
CO5	Model complex geometry problems using finite element technology	55%
CO6	Possess a good understanding of plate bending theory	55%

**COURSE END SURVEY - 04CE6404 - Finite Element Analysis**

Sl.No	Questions & Options
CO1	To what extend you are able to understand general procedure of FEA
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO2	To what extend you are able to perform finite element formulations for simple engineering problems
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO3	To what extend you are able to derive shape functions using different methods
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO4	To what extend you are able to derive stiffness matrix for various elements
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO5	To what extend you are able to model complex geometry problems using finite element technology
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO6	To what extend you are able to understand plate bending theory
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>

**CO->PO MAPPING - 04CE6404 - Finite Element Analysis**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
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CO1	3	3	3	3	1	1	1	1	2	1	2
CO2	3	3	2	2		1		1	2	1	2
CO3	2	2	2	2					1	1	1
CO4	2	2	1	2					1	1	1
CO5	3	3	3	3	2	1	1	1	2	1	2
CO6	3	2	1	2	1	1	1	1	2	1	2

**CO->PSO MAPPING - 04CE6404 - Finite Element Analysis**

CO/PSO	PSO1	PSO2
CO1	3	1
CO2	3	
CO3	2	
CO4	2	
CO5	3	1
CO6	3	1

**COURSE->PO MAPPING - 04CE6404 - Finite Element Analysis**

04CE6404/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
	3	3	3	3	2	1	1	1	2	1	2

**COURSE->PSO MAPPING - 04CE6404 - Finite Element Analysis**

04CE6404/PSO	PSO1	PSO2
	3	1

**04CE6406**

Course Code	Course Name	L-T-P:C	Year of Introduction
04CE6406	Theory of Plates and Shells	3-0-0:3	2016

No.	Course Outcome - 04CE6406 - Theory of Plates and Shells	Target
CO1	Possess a good understanding of the classification of plates and formulation of differential equation	60%
CO2	Derive different relationships in Pure bending of plates	60%
CO3	Analyse and solve laterally loaded rectangular plates at different boundary conditions	60%
CO4	Solve simply supported rectangular plates under different loading conditions	60%

CO5	Analyse circular plates using polar coordinates	60%
CO6	Analyse shell structures and folded plates	60%

**COURSE END SURVEY - 04CE6406 - Theory of Plates and Shells**

Sl.No	Questions & Options
CO1	To what extend you are able to formulate differential equation of plates
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO2	To what extend you are able to derive different relationships in Pure bending of plates
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO3	To what extend you are able to analyse and solve laterally loaded rectangular plates at different boundary conditions
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO4	To what extend you are able to solve simply supported rectangular plates under different loading conditions
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO5	To what extend you are able to analyse circular plates using polar coordinates
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO6	To what extend you are able to analyse shell structures and folded plates
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>

**CO->PO MAPPING - 04CE6406 - Theory of Plates and Shells**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	3	3	2	1	1	1	1	2	1	1
CO2	3	3	3	1	1	1		1	2	1	1
CO3	3	3	3	2	1	1		1	2	1	1
CO4	3	3	3	1	1			1	2	1	1
CO5	3	3	3	1	1			1	2	1	1
CO6	3	3	3	2	1	1		1	2	1	1

**CO->PSO MAPPING - 04CE6406 - Theory of Plates and Shells**

CO/PSO	PSO1	PSO2
CO1	3	1
CO2	2	
CO3	3	1
CO4	2	

CO5	3	1
CO6	3	1

**COURSE->PO MAPPING - 04CE6406 - Theory of Plates and Shells**

04CE6406/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
	3	3	3	2	1	1	1	1	2	1	1

**COURSE->PSO MAPPING - 04CE6406 - Theory of Plates and Shells**

04CE6406/PSO	PSO1	PSO2
	3	1

**04CE6416**

Course Code	Course Name	L-T-P:C	Year of Introduction
04CE6416	Construction Methods and Equipments	3-0-0:3	2016

No.	Course Outcome - 04CE6416 - Construction Methods and Equipments	Target
CO1	Describe construction methods prevailing in the industry for tunnels, piers, deep foundations and basement construction	61%
CO2	Explain the different methods of ground water control for basement construction, water proofing for basement	61%
CO3	Develop a construction methodology for construction of bridges, roads, railways, dams, harbours, riverworks and pipelines	61%
CO4	Analyse a construction site and project requirements and be able to suggest suitable construction equipments	61%
CO5	Describe the working principle and select a suitable equipment for aggregate crushing, concrete batching, mixing and pumping	61%

**COURSE END SURVEY - 04CE6416 - Construction Methods and Equipments**

Sl.No	Questions & Options
CO1	Can you describe the common construction methods prevailing in the industry?
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO2	What is your confidence level to execute a construction activity based on a given plan?
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO3	What is your confidence level to develop a construction activity plan?
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO4	What is your confidence level to analyse a construction site and suggest suitable construction methods?



	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO5	What is your confidence level to analyse a construction site and suggest efficient methods of using construction equipments?
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5

**CO->PO MAPPING - 04CE6416 - Construction Methods and Equipments**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	2	1	1	1		2	2	3	3		2
CO2	3	3	3	2	1	3	3	3	2	1	3
CO3	3	3	3	2	3	3	3	3	2	1	3
CO4	3	3	3	2	2	3	3	3	2	1	3
CO5	3	3	3	2	2	3	3	3	2	1	3

**CO->PSO MAPPING - 04CE6416 - Construction Methods and Equipments**

CO/PSO	PSO1	PSO2
CO1		1
CO2	2	1
CO3	1	1
CO4	1	1
CO5	1	1

**COURSE->PO MAPPING - 04CE6416 - Construction Methods and Equipments**

04CE6416/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
	3	3	3	2	3	3	3	3	3	1	3

**COURSE->PSO MAPPING - 04CE6416 - Construction Methods and Equipments**

04CE6416/PSO	PSO1	PSO2
	2	1

**04CE6424**

Course Code	Course Name	L-T-P:C	Year of Introduction
04CE6424	Quantitative Methods in Construction	3-0-0:3	2016

**COURSE END SURVEY - 04CE6424 - Quantitative Methods in Construction****CO->PO MAPPING - 04CE6424 - Quantitative Methods in Construction**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
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**CO->PSO MAPPING - 04CE6424 - Quantitative Methods in Construction**

CO/PSO	PSO1	PSO2
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**COURSE->PO MAPPING - 04CE6424 - Quantitative Methods in Construction**

04CE6424/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11

**COURSE->PSO MAPPING - 04CE6424 - Quantitative Methods in Construction**

04CE6424/PSO	PSO1	PSO2

**04CE6492**

Course Code	Course Name	L-T-P:C	Year of Introduction
04CE6492	Mini Project	0-0-4:2	2016

No.	Course Outcome - 04CE6492 - Mini Project	Target
CO1	Review literature to find feasible solutions for a problem	61%
CO2	Analyse a problem systematically and develop objective statements.	61%
CO3	Develop a scientific method to reach an objective	61%
CO4	Communicate and convince others on the method of achieving an objective	61%
CO5	Document a work plan/work report Properly and convince others.	61%

**COURSE END SURVEY - 04CE6492 - Mini Project**

Sl.No	Questions & Options
CO1	Can you review literature to find feasible solutions for a problem
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO2	Can you systematically analyse a problem and develop objective statements
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO3	Can you develop a scientific method to reach an objective ?
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO4	Can you communicate and convince others on the method of achieving an objective
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO5	Can you properly document a work plan/work report
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5

**CO->PO MAPPING - 04CE6492 - Mini Project**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	3	3	2	2	1		1	2	1	2
CO2	3	3	3	3	3	1	2	2	3	1	3
CO3	3	3	3	3	3	2	1	1	3	1	3
CO4	3	3	2	3	1	2	1	3	1	1	2
CO5	3	3	2	2	1	1	1	1	1	2	1

**CO->PSO MAPPING - 04CE6492 - Mini Project**

CO/PSO	PSO1	PSO2
CO1	1	2
CO2	1	2
CO3	1	2
CO4	1	2
CO5	1	2

**COURSE->PO MAPPING - 04CE6492 - Mini Project**

04CE6492/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
	3	3	3	3	3	2	2	3	3	2	3

**COURSE->PSO MAPPING - 04CE6492 - Mini Project**

04CE6492/PSO	PSO1	PSO2
	1	2

**04CE6494**

Course Code	Course Name	L-T-P:C	Year of Introduction
04CE6494	Structural Engineering Lab	0-0-2:1	2016

No.	Course Outcome - 04CE6494 - Structural Engineering Lab	Target
CO1	Identify the variation in mix proportion for various designed strength with and without admixture	70.5%
CO2	understand the difference in tensile and flexural strength with various grade of concrete	70.5%
CO3	able to find the difference in shear, flexural and buckling behavior and free vibration analysis of RCC beam and column	70.5%
CO4	Understand the properties of materials for required behavior of concrete	70.5%
CO5	learn NDT- test in concrete about surface hardness and internal density of concrete	70.5%

**COURSE END SURVEY - 04CE6494 - Structural Engineering Lab**

Sl.No	Questions & Options
CO1	At what extent you understand the variation in concrete based on various strength and admixture?
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO2	Did you feel the difference in tensile and flexural properties of concrete with various grade?
	Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>
CO3	how much you understand the shear, flexure and free vibration of RCC member
	Answer Choice- <i>5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5</i>
CO4	How much can you design concrete based on material
	Answer Choice- <i>Very advanced/Advanced/Proficient/Basic/ Minimal</i>
CO5	how much knowledge you require on NDT to learn concrete internal and external property
	Answer Choice- <i>5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5</i>

**CO->PO MAPPING - 04CE6494 - Structural Engineering Lab**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3		3								
CO2	3	1	3								
CO3	2	1	3								
CO4	2	2	3								
CO5	3	2	3								

**CO->PSO MAPPING - 04CE6494 - Structural Engineering Lab**

CO/PSO	PSO1	PSO2
CO1	3	3
CO2	3	1
CO3	3	1
CO4		3
CO5	1	3

**COURSE->PO MAPPING - 04CE6494 - Structural Engineering Lab**

04CE6494/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
	3	2	3								

**COURSE->PSO MAPPING - 04CE6494 - Structural Engineering Lab**

04CE6494/PSO	PSO1	PSO2
	3	3

**04CE6418**

Course Code	Course Name	L-T-P:C	Year of Introduction
04CE6418	Advanced Concrete Technology	3-0-0:3	2016

No.	Course Outcome - 04CE6418 - Advanced Concrete Technology	Target
CO1	Identify the functional role of aggregate, admixture and cement in concrete and determine its properties as per specifications	60%
CO2	Acquire and determine the engineering properties of fresh and hardened concrete	50%
CO3	Design a concrete mix methods to fulfill the required properties of fresh and hardened concrete	50%
CO4	Select and Design special concretes depending on their specific applications by using special methodology	60%
CO5	Evaluate the effect of structure on service life based on durability and demonstrate the technique of non-destructive testing of concrete	50%

**COURSE END SURVEY - 04CE6418 - Advanced Concrete Technology**

Sl.No	Questions & Options
CO1	how much confident do you have to identify the functional role of aggregate, admixture and cement in concrete as per specification?
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO2	how much knowledge gain in understand the fresh and hard properties of concrete
	Answer Choice- Excellent/Very Good/Good/Satisfactory/Poor
CO3	can you design concrete based to satisfy fresh and hard properties of concrete
	Answer Choice- Always/Very often/Sometimes/Rarely/Never
CO4	how much confident level to select required concrete based on application?
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO5	at what level you can able to identify the service life of structure using NDT ?
	Answer Choice- Very advanced/Advanced/Proficient/Basic/ Minimal

**CO->PO MAPPING - 04CE6418 - Advanced Concrete Technology**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	1	2								
CO2	3	1	1								

CO3	2	2	3								
CO4	2		2								
CO5	2	2	2								

**CO->PSO MAPPING - 04CE6418 - Advanced Concrete Technology**

CO/PSO	PSO1	PSO2
CO1	2	2
CO2	2	2
CO3	2	2
CO4	2	2
CO5	2	2

**COURSE->PO MAPPING - 04CE6418 - Advanced Concrete Technology**

04CE6418/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
	3	2	3								

**COURSE->PSO MAPPING - 04CE6418 - Advanced Concrete Technology**

04CE6418/PSO	PSO1	PSO2
	2	2

**04CE6426**

Course Code	Course Name	L-T-P:C	Year of Introduction
04CE6426	Project Formulation and Appraisal	3-0-0:3	2016

No.	Course Outcome - 04CE6426 - Project Formulation and Appraisal	Target
CO1	Students should be able to identify and explain the key aspects involved in project identification, screening and analysis	55%
CO2	Students should be able to list the elements to be included in a detailed project report and list the project clearances required.	55%
CO3	Students should be able to select a project by applying the concept of time value of money using methods such as NPV,BCR,IRR,ARR, Pay Back Period.	55%
CO4	Students should be able to discuss how risk in projects is analysed and assessed in practice.	55%
CO5	Students should have a general awareness of means of financing projects and role of private sector in financing infrastructure development projects.	55%

**COURSE END SURVEY - 04CE6426 - Project Formulation and Appraisal**

Sl.No	Questions & Options
CO1	Can you identify and explain the key aspects involved in project identification, screening and analysis (market, demand, technical, financial)?
	Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>
CO2	Can you list the aspects to be included in a detailed project report and identify the project clearances required.
	Answer Choice- <i>Most acceptable/Moderately Acceptable Acceptable/Less acceptable/Not acceptable</i>
CO3	Can you assess a project by using the different methods of Investment criteria ( NPV, BCR,IRR, ARR, Pay Back Period)?
	Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>
CO4	Can you discuss how risk in projects is analysed and assessed in practice?
	Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>
CO5	Can you discuss the different methods of project financing and the role of private sector in financing Infrastructure development projects(BOT, BOOT,BOLT)?
	Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>

**CO->PO MAPPING - 04CE6426 - Project Formulation and Appraisal**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	1	2		1	1	2	2		2	
CO2	2	1	1			1		3	1	2	
CO3	2	1	2		1		3	1			2
CO4	2	1	2		1	1	2		1	1	1
CO5	2					1	2		1		

**CO->PSO MAPPING - 04CE6426 - Project Formulation and Appraisal**

CO/PSO	PSO1	PSO2
CO1		2
CO2		2
CO3		
CO4		
CO5		2

**COURSE->PO MAPPING - 04CE6426 - Project Formulation and Appraisal**

04CE6426/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
	3	1	2		1	1	3	3	1	2	2

**COURSE->PSO MAPPING - 04CE6426 - Project Formulation and Appraisal**

04CE6426/PSO	PSO1	PSO2
		2

**04CE6408**

Course Code	Course Name	L-T-P:C	Year of Introduction
04CE6408	Advanced Analysis of Structures	3-0-0:3	2016

No.	Course Outcome - 04CE6408 - Advanced Analysis of Structures	Target
CO1	To understand static and kinematic indeterminacy of skeletal structures - trusses, rigid jointed frames	45%
CO2	To review with a new perspective the Maxwell, Betti, Castigliano theorems- principles virtual work- DOF, Stiffness matrix of elements	40%
CO3	To be able to formulate stiffness matrices for pin jointed and rigid jointed frames, continuous beams	45%
CO4	Able to assemble stiffness matrices for loads, global stiffness matrix including boundary conditions for rigid and pin jointed frames and solve by Gauss elimination	40%
CO5	Element Able to form Flexibility matrix for truss and beam element and formulate their flexibility matrix equations force transformation matrix if required,	45%
CO6	To be made capable of analyzing for member forces and displacements of trusses, beams, frames and grid by stiffness and flexibility methods	45%

**COURSE END SURVEY - 04CE6408 - Advanced Analysis of Structures**

Sl.No	Questions & Options
CO1	What is your level of capability in determining the degree of static and kinematic indeterminacy of skeletal structures?
	Answer Choice- <i>Very high degree/High Degree/Moderate degree/Small Degree/Not at all</i>
CO2	Express your level of clarity in theorems of Betti, Maxwell and Castigliano.
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO3	Rate your ability to formulate stiffness matrices for pin jointed and rigid jointed frames.
	Answer Choice- <i>Very high degree/High Degree/Moderate degree/Small Degree/Not at all</i>
CO4	Are you satisfied with the classes taken on assembling and solving stiffness matrices for truss and framed structures?
	Answer Choice- <i>Very satisfied/Satisfied/Neither satisfied nor dissatisfied/Dissatisfied /Very dissatisfied</i>
CO5	How confident you are in formulating Flexibility matrices and equations for truss and beam elements?
	Answer Choice- <i>Very high degree/High Degree/Moderate degree/Small Degree/Not at all</i>



CO6	How do you rate your overall capability to solve problems on analysis of truss, beam and rigid jointed frames by matrix methods?
	Answer Choice- <i>Very high degree/High Degree/Moderate degree/Small Degree/Not at all</i>

**CO->PO MAPPING - 04CE6408 - Advanced Analysis of Structures**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	2	2	3	1					1		
CO2	3	2	3	2					1		
CO3	3	3	2	3	3				1		
CO4	2	3	3	2	3	1			1		1
CO5	1	1	3	2	3				1		
CO6	3	3	3	2	3				2		1

**CO->PSO MAPPING - 04CE6408 - Advanced Analysis of Structures**

CO/PSO	PSO1	PSO2
CO1	1	
CO2	3	
CO3	3	
CO4	2	
CO5	2	
CO6	3	

**COURSE->PO MAPPING - 04CE6408 - Advanced Analysis of Structures**

04CE6408/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
	3	3	3	3	3	1			2		1

**COURSE->PSO MAPPING - 04CE6408 - Advanced Analysis of Structures**

04CE6408/PSO	PSO1	PSO2
	3	

**SEMESTER-3****04CE7407**

Course Code	Course Name	L-T-P:C	Year of Introduction
04CE7407	Design of Tall Buildings	3-0-0:3	2016

No.	Course Outcome - 04CE7407 - Design of Tall Buildings	Target
CO1	1. To understand various design philosophies and other considerations to be adopted in design of tall buildings	50%
CO2	2. To analyse the vertical and horizontal load calculations in tall buildings and different systems of load distribution.	48%
CO3	3. To propose various structural forms those are suitable for design of a structure.	51%
CO4	4. To understand the significance of structural modeling and design for primary and secondary analysis.	52%
CO5	5. To evaluate how tall buildings deform under various loading conditions.	52%

**COURSE END SURVEY - 04CE7407 - Design of Tall Buildings**

Sl.No	Questions & Options
CO1	CO2
CO3	CO4
CO5	

**CO->PO MAPPING - 04CE7407 - Design of Tall Buildings**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	2	2	2								
CO2	2	2	3								
CO3	2		2								
CO4	2	2	2								
CO5	3	2	3								

**CO->PSO MAPPING - 04CE7407 - Design of Tall Buildings**

CO/PSO	PSO1	PSO2
CO1	3	1
CO2	3	
CO3	3	1
CO4	2	
CO5	2	

**COURSE->PO MAPPING - 04CE7407 - Design of Tall Buildings**

04CE7407/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
	3	2	3								

**COURSE->PSO MAPPING - 04CE7407 - Design of Tall Buildings**

04CE7407/PSO	PSO1	PSO2
	3	1

**04CE7413**

Course Code	Course Name	L-T-P:C	Year of Introduction
04CE7413	Maintenance & Rehabilitation of Structures	3-0-0:3	2016

No.	Course Outcome - 04CE7413 - Maintenance & Rehabilitation of Structures	Target
CO1	Relate the impact of quality of construction and properties of concrete with mechanism of deterioration of RCC structures	60%
CO2	The course should provide the students with an understanding of the typical mechanisms of deterioration of reinforced concrete structures and ability to predict the service life	60%
CO3	Basic understanding of methods for maintenance and repair of concrete structures	60%
CO4	Basic understanding of methods for inspection of concrete structures - both field and laboratory methods	60%
CO5	Students should be able to suggest mitigating measures and repair strategies	60%

**COURSE END SURVEY - 04CE7413 - Maintenance & Rehabilitation of Structures**

Sl.No	Questions & Options
CO1	how effective the quality of construction is important to save RCC structure deterioration
	Answer Choice- <i>Very high degree/High Degree/Moderate degree/Small Degree/Not at all</i>
CO2	how much is the important of mechanism of deterioration of RCC to predict the service life
	Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>
CO3	how much you understand the maintenance and repair of concrete structure
	Answer Choice- <i>5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5</i>
CO4	how much you understand the inspection methods for repair and maintenance
	Answer Choice- <i>5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5</i>
CO5	how much you are capable now to suggest mitigation measure and repair strategies
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>

**CO->PO MAPPING - 04CE7413 - Maintenance & Rehabilitation of Structures**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	1	3								
CO2	3	2	2								

CO3	2	1	2								
CO4	1	1	2								
CO5	2	3	3								

**CO->PSO MAPPING - 04CE7413 - Maintenance & Rehabilitation of Structures**

CO/PSO	PSO1	PSO2
CO1	3	3
CO2	3	3
CO3	2	2
CO4	2	
CO5	3	1

**COURSE->PO MAPPING - 04CE7413 - Maintenance & Rehabilitation of Structures**

04CE7413/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
	3	3	3								

**COURSE->PSO MAPPING - 04CE7413 - Maintenance & Rehabilitation of Structures**

04CE7413/PSO	PSO1	PSO2
	3	3

**04CE7491**

Course Code	Course Name	L-T-P:C	Year of Introduction
04CE7491	Seminar - II	0-0-2:0	2016

No.	Course Outcome - 04CE7491 - Seminar - II	Target
CO1	Acquire knowledge on latest developments on a specific area of interest	62%
CO2	Logically connect the works done by different authors in the same area	62%
CO3	Understand the gaps in literature on a specific topic	62%
CO4	Identify research works that could be done in the immediate future	62%
CO5	Write report and make presentations on the area studied	62%

**COURSE END SURVEY - 04CE7491 - Seminar - II**

Sl.No	Questions & Options
CO1	How do you rate your capability to acquire knowledge on latest developments on a specific area of interest

	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO2	How do you rate your capability to logically connect the works done by different authors in the same area
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO3	How do you rate your capability to understand the gaps in literature on a specific topic
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO4	How do you rate your capability to identify research works that could be done in the immediate future
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO5	How do you rate your capability to write report and make presentations ?
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>

**CO->PO MAPPING - 04CE7491 - Seminar - II**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1											
CO2											
CO3											
CO4											
CO5											

**CO->PSO MAPPING - 04CE7491 - Seminar - II**

CO/PSO	PSO1	PSO2
CO1		
CO2		
CO3		
CO4		
CO5		

**COURSE->PO MAPPING - 04CE7491 - Seminar - II**

04CE7491/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11

**COURSE->PSO MAPPING - 04CE7491 - Seminar - II**

04CE7491/PSO	PSO1	PSO2

**04CE7493**

Course Code	Course Name	L-T-P:C	Year of Introduction
04CE7493	Project (Phase - I)	0-0-12:6	2016

No.	Course Outcome - 04CE7493 - Project (Phase - I)	Target
CO1	Review literature to find feasible solutions for a problem	50%
CO2	Systematically analyse a problem and develop objective statements	50%
CO3	Develop a scientific method to reach an objective	50%
CO4	Communicate and convince others on the method of achieving an objective	50%
CO5	Properly document a work plan/work report	50%

**COURSE END SURVEY - 04CE7493 - Project (Phase - I)**

Sl.No	Questions & Options
CO1	I am capable to review literature to find feasible solutions for a problem
	Answer Choice- <i>Strongly Agree/Agree/Neutral Disagree/Strongly disagree</i>
CO2	I am capable to systematically analyse a problem and develop objective statements
	Answer Choice- <i>Strongly Agree/Agree/Neutral Disagree/Strongly disagree</i>
CO3	I am capable to develop a scientific method to reach an objective
	Answer Choice- <i>Strongly Agree/Agree/Neutral Disagree/Strongly disagree</i>
CO4	I am capable to communicate and convince others on the method of achieving an objective
	Answer Choice- <i>Strongly Agree/Agree/Neutral Disagree/Strongly disagree</i>
CO5	I am capable to properly document a work plan / report
	Answer Choice- <i>Strongly Agree/Agree/Neutral Disagree/Strongly disagree</i>

**CO->PO MAPPING - 04CE7493 - Project (Phase - I)**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1											
CO2											
CO3											
CO4											
CO5											

**CO->PSO MAPPING - 04CE7493 - Project (Phase - I)**

CO/PSO	PSO1	PSO2
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CO1		
CO2		
CO3		
CO4		
CO5		

**COURSE->PO MAPPING - 04CE7493 - Project (Phase - I)**

04CE7493/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11

**COURSE->PSO MAPPING - 04CE7493 - Project (Phase - I)**

04CE7493/PSO	PSO1	PSO2

**04CE7415**

Course Code	Course Name	L-T-P:C	Year of Introduction
04CE7415	Construction Personnel Management	3-0-0:3	2016

No.	Course Outcome - 04CE7415 - Construction Personnel Management	Target
CO1	To analyse the manpower deployment in a construction project	58%
CO2	To design self managing work teams	58%
CO3	To evaluate the group dynamics in a construction project	58%
CO4	To execute welfare measures in a construction organisation	58%
CO5	To analyse the wage structure in a construction organisation	58%

**COURSE END SURVEY - 04CE7415 - Construction Personnel Management**

Sl.No	Questions & Options
CO1	I am capable to analyse the manpower deployment in a construction project
	Answer Choice- <i>Strongly Agree/Agree/Neutral Disagree/Strongly disagree</i>
CO2	I am capable to design self managing work teams
	Answer Choice- <i>Strongly Agree/Agree/Neutral Disagree/Strongly disagree</i>
CO3	I am capable to evaluate the group dynamics in a construction project
	Answer Choice- <i>Strongly Agree/Agree/Neutral Disagree/Strongly disagree</i>
CO4	I am capable to execute welfare measures in a construction organisation

	Answer Choice- <i>Strongly Agree/Agree/Neutral Disagree/Strongly disagree</i>
CO5	I am capable to analyse the wage structure in a construction organisation
	Answer Choice- <i>Strongly Agree/Agree/Neutral Disagree/Strongly disagree</i>

**CO->PO MAPPING - 04CE7415 - Construction Personnel Management**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	2	2	2		1	3	3	1	1	2	
CO2	2	2	2	1		3	3	2		2	
CO3			2			3	3	2		2	
CO4					1		3	1		3	
CO5					1		3			3	1

**CO->PSO MAPPING - 04CE7415 - Construction Personnel Management**

CO/PSO	PSO1	PSO2
CO1		1
CO2		1
CO3		
CO4		
CO5		3

**COURSE->PO MAPPING - 04CE7415 - Construction Personnel Management**

04CE7415/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
	2	2	2	1	1	3	3	2	1	3	1

**COURSE->PSO MAPPING - 04CE7415 - Construction Personnel Management**

04CE7415/PSO	PSO1	PSO2
		3

**04ce7401**

Course Code	Course Name	L-T-P:C	Year of Introduction
04ce7401	Design of Steel – Concrete Composite Structures	3-0-0:3	2016

No.	Course Outcome - 04ce7401 - Design of Steel – Concrete Composite Structures	Target
CO1	To get introduced to composite construction and behaviour of steel composite structures	51%
CO2	To design various steel concrete composite members	52%



CO3	To understand the function and design of various connectors	52%
CO4	Carry out case studies on steel composite construction	50%
CO5	To understand how composite structures behave under seismic loading	52%

**COURSE END SURVEY - 04ce7401 - Design of Steel – Concrete Composite Structures**

Sl.No	Questions & Options
CO1	How good is your concept in steel concrete composite construction?
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO2	How capable are you in designing steel concrete composite structures?
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO3	How is your understanding on various types of connectors?
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO4	Case studies enhance our knowledge in steel concrete composite construction?
	Answer Choice- <i>Strongly Agree/Agree/Neutral Disagree/Strongly disagree</i>
CO5	How capable are you in carrying out seismic analysis of steel concrete composite structures?
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>

**CO->PO MAPPING - 04ce7401 - Design of Steel – Concrete Composite Structures**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	2	1								
CO2	2	2									
CO3	1	1									
CO4		1									
CO5	2	2									

**CO->PSO MAPPING - 04ce7401 - Design of Steel – Concrete Composite Structures**

CO/PSO	PSO1	PSO2
CO1	2	1
CO2	2	
CO3	2	
CO4	2	1
CO5	2	1

**COURSE->PO MAPPING - 04ce7401 - Design of Steel – Concrete Composite Structures**

04ce7401/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
	3	2	1								

**COURSE->PSO MAPPING - 04ce7401 - Design of Steel – Concrete Composite Structures**

04ce7401/PSO	PSO1	PSO2
	2	1

**SEMESTER-4**
**04CE7494**

Course Code	Course Name	L-T-P:C	Year of Introduction
04CE7494	Project (Phase -II)	0-0-21:12	2016

No.	Course Outcome - 04CE7494 - Project (Phase -II)	Target
CO1	Review literature to find feasible solutions for a problem	62%
CO2	Systematically analyse a problem and develop objective statements	62%
CO3	Develop a scientific method to reach an objective	62%
CO4	Communicate and convince others on the method of achieving an objective	62%
CO5	Properly document a work plan/work report	62%

**COURSE END SURVEY - 04CE7494 - Project (Phase -II)**

Sl.No	Questions & Options
CO1	Can you to review literature to find feasible solutions for a problem
	Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>
CO2	Can you systematically analyse a problem and develop objective statements
	Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>
CO3	Can you develop a scientific method to reach an objective ?
	Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>
CO4	Can you communicate and convince others on the method of achieving an objective
	Answer Choice- <i>5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5</i>
CO5	Can you properly document a work plan/work report ?
	Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>

**CO->PO MAPPING - 04CE7494 - Project (Phase -II)**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	3	2	1	1	1		1	1	1	2
CO2	3	2	3	2	1	1	1	1	1	1	2
CO3	3	3	3	3	2	2	2	2	2	1	1
CO4	3	3	2	1		1	1	3	1	1	1
CO5	3	3	1	1		2	1	1	1	1	1

**CO->PSO MAPPING - 04CE7494 - Project (Phase -II)**

CO/PSO	PSO1	PSO2
CO1	1	2
CO2	1	2
CO3	1	2
CO4	1	2
CO5	1	2

**COURSE->PO MAPPING - 04CE7494 - Project (Phase -II)**

04CE7494/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
	3	3	3	3	2	2	2	3	2	1	2

**COURSE->PSO MAPPING - 04CE7494 - Project (Phase -II)**

04CE7494/PSO	PSO1	PSO2
	1	2

**M.Tech-Computer Aided Structural Engineering**
**SEMESTER-1**
**04CE6103**

Course Code	Course Name	L-T-P:C	Year of Introduction
04CE6103	Theory of Elasticity	4-0-0:4	2016

No.	Course Outcome - 04CE6103 - Theory of Elasticity	Target
CO1	The Students shall be able to understand the concepts of stress, strain and strain theory and analyse solid mechanics problems	65.2%
CO2	The Students shall be able to analyse two dimensional stress strain problems and understand Airy's stress function.	65.2%

CO3	The Students shall be able to interpret the use of plane stress and strains and compatibility conditions to problems.	65.2%
CO4	The Students shall be able to analyse axisymmetric problems and understand the stress distribution.	65.2%
CO5	The Students shall be able to apply various failure criteria to problems and understand the concepts of plasticity.	65.2%

**COURSE END SURVEY - 04CE6103 - Theory of Elasticity**

Sl.No	Questions & Options
CO1	To what extent the Students shall be able to understand the concepts of stress, strain and strain theory and analyse solid mechanics problems Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO2	to what extent you are able to analyse two dimensional stress strain problems and understand Airy's stress function? Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO3	To what extent the Students shall be able to interpret the use of plane stress and strains and compatibility conditions to problems. Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO4	To what extent the Students shall be able to analyse axisymmetric problems and understand the stress distribution. Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO5	To what extent the Students shall be able to apply various failure criteria to problems and understand the concepts of plasticity. Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>

**CO->PO MAPPING - 04CE6103 - Theory of Elasticity**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	1	2								
CO2	3	1	2								
CO3	3	1	2								
CO4	3	1	2								
CO5	3	1	2								

**CO->PSO MAPPING - 04CE6103 - Theory of Elasticity**

CO/PSO	PSO1	PSO2
CO1	2	
CO2	2	
CO3	2	

CO4	2	
CO5	2	

**COURSE->PO MAPPING - 04CE6103 - Theory of Elasticity**

04CE6103/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
	3	1	2								

**COURSE->PSO MAPPING - 04CE6103 - Theory of Elasticity**

04CE6103/PSO	PSO1	PSO2
	2	

**04CE6101**

Course Code	Course Name	L-T-P:C	Year of Introduction
04CE6101	Analytical methods in Engineering	4-0-0:4	2016

No.	Course Outcome - 04CE6101 - Analytical methods in Engineering	Target
CO1	Analyze the model by selecting and applying a suitable mathematical method	62%
CO2	Interpreting the mathematical results in physical or other terms to see what it practically means and implies	62%
CO3	Analyze and design engineering situations and solve problems using algebraic methods	62%
CO4	Interpret the solutions of boundary value problems in an engineering concept	62%
CO5	Analyze finite difference approximations to solve partial differential equations	62%
CO6	Recognize the importance of numerical analysis for solving a well-proposed mathematical problem	62%

**COURSE END SURVEY - 04CE6101 - Analytical methods in Engineering**

Sl.No	Questions & Options
CO1	How far you have been able to analyze the model by applying mathematical methods
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO2	How far you have been able to interpret the mathematical results in physical terms
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO3	How far you have been able to solve problems using algebraic methods
	Answer Choice- <i>Very frequently/Frequently/Rarely Very rarely/Never</i>
CO4	How far have you been able to Interpret the solutions of boundary value problems
	Answer Choice- <i>Very frequently/Frequently/Rarely Very rarely/Never</i>

CO5	How far have you been able to analyze finite difference approximations to solve partial differential equations
	Answer Choice- <i>Very frequently/Frequently/Rarely Very rarely/Never</i>
CO6	How far have you been able to recognize the importance of numerical analysis for solving a well-proposed mathematical problems.
	Answer Choice- <i>Very frequently/Frequently/Rarely Very rarely/Never</i>

**CO->PO MAPPING - 04CE6101 - Analytical methods in Engineering**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	2	1									
CO2	2	1									
CO3	2	1									
CO4	2	1									
CO5	2	1									
CO6	2	1									

**CO->PSO MAPPING - 04CE6101 - Analytical methods in Engineering**

CO/PSO	PSO1	PSO2
CO1	2	
CO2	2	
CO3	2	
CO4	2	
CO5	3	
CO6	3	

**COURSE->PO MAPPING - 04CE6101 - Analytical methods in Engineering**

04CE6101/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
	2	1									

**COURSE->PSO MAPPING - 04CE6101 - Analytical methods in Engineering**

04CE6101/PSO	PSO1	PSO2
	3	

**04CE6105**

Course Code	Course Name	L-T-P:C	Year of Introduction
04CE6105	Structural Dynamics	3-0-0:3	2016

No.	Course Outcome - 04CE6105 - Structural Dynamics	Target
CO1	Analyse various types of dynamic problems and understand the basic concepts of vibration	61%
CO2	Interpret the equations of motion of different dynamic systems.	61%
CO3	Understand the different types of vibration and damping.	61%
CO4	Analyse and determine responses of dynamic systems to harmonic, impulsive and periodic loading	61%
CO5	Analyse multidegree freedom systems and continuous systems and understand approximate methods	61%

**COURSE END SURVEY - 04CE6105 - Structural Dynamics**

Sl.No	Questions & Options
CO1	To what extend you are able to analyse various types of dynamic problems
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO2	To what extend you are able to interpret the equations of motion of different dynamic systems
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO3	To what extend you are able to analyse different types of vibration and damping
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO4	To what extend you are able to analyse and determine responses of dynamic systems to harmonic, impulsive and periodic loading
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO5	To what extend you are able to analyse multidegree freedom systems and continuous systems using approximate methods
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>

**CO->PO MAPPING - 04CE6105 - Structural Dynamics**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	1	3								
CO2	3	1	3								
CO3	3	1	3								
CO4	3	1	3								
CO5	3	1	3								

**CO->PSO MAPPING - 04CE6105 - Structural Dynamics**

CO/PSO	PSO1	PSO2
CO1	3	1

CO2	3	1
CO3	3	1
CO4	3	1
CO5	3	1

**COURSE->PO MAPPING - 04CE6105 - Structural Dynamics**

04CE6105/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
	3	1	3								

**COURSE->PSO MAPPING - 04CE6105 - Structural Dynamics**

04CE6105/PSO	PSO1	PSO2
	3	1

**04CE6107**

Course Code	Course Name	L-T-P:C	Year of Introduction
04CE6107	Advanced Design of Concrete Structures	3-0-0:3	2016

No.	Course Outcome - 04CE6107 - Advanced Design of Concrete Structures	Target
CO1	1. To design Reinforced cement concrete structural elements.	51%
CO2	2. To analyse the possible deflection and crack formation that can occur in various structures.	51%
CO3	3. To carry out new methodologies in slab design in plastic stage.	50%
CO4	4. To analyse the building for horizontal loads manually.	51%
CO5	5. To study the fire resistance, ductility property of structural members along with quality control of concrete.	50%

**COURSE END SURVEY - 04CE6107 - Advanced Design of Concrete Structures**

Sl.No	Questions & Options
CO1	after taking this course, Are you confident in designing structural elements like deep beam, corbel, flat slab etc?
	Answer Choice- <i>Very high degree/High Degree/Moderate degree/Small Degree/Not at all</i>
CO2	How far you are capable of computing crack width and deflection of beams and one way slab after studying this course?
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO3	Were the discussions made on Yield line theory and Hillerborg's strip method of rcc slabs satisfactory?



	Answer Choice- <i>Very satisfied/Satisfied/Neither satisfied nor dissatisfied/Dissatisfied /Very dissatisfied</i>
CO4	Are you capable of analyzing building frames subject to horizontal force, by portal and cantilever methods ?
	Answer Choice- <i>Very high degree/High Degree/Moderate degree/Small Degree/Not at all</i>
CO5	Do you feel that the discussions made on fire resistance and durability of concrete to be useful for your profession?
	Answer Choice- <i>Extremely helpful/Moderately helpful/ Helpful/A little helpful/Not at all helpful</i>

**CO->PO MAPPING - 04CE6107 - Advanced Design of Concrete Structures**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	2									
CO2	3	2									
CO3	3	2									
CO4	3	2									
CO5	2	3	2								

**CO->PSO MAPPING - 04CE6107 - Advanced Design of Concrete Structures**

CO/PSO	PSO1	PSO2
CO1	3	
CO2	3	
CO3	3	
CO4	2	
CO5	1	2

**COURSE->PO MAPPING - 04CE6107 - Advanced Design of Concrete Structures**

04CE6107/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
	3	3	2								

**COURSE->PSO MAPPING - 04CE6107 - Advanced Design of Concrete Structures**

04CE6107/PSO	PSO1	PSO2
	3	2

**04CE6113**

Course Code	Course Name	L-T-P:C	Year of Introduction
04CE6113	Advanced Concrete Technology	3-0-0:3	2016

No.	Course Outcome - 04CE6113 - Advanced Concrete Technology	Target
CO1	Identify the functional role of aggregate, admixture and cement in concrete and determine its properties as per specifications	61%
CO2	Acquire and determine the engineering properties of fresh and hardened concrete using mineral and chemical admixture	61%
CO3	Design a concrete mix using ACI and IS code methods to fulfill the required properties of fresh and hardened concrete	61%
CO4	Select and Design special concretes depending on their specific applications	61%
CO5	Evaluate the effect of structure on service life based on durability and demonstrate the technique of non-destructive testing of concrete	61%

**COURSE END SURVEY - 04CE6113 - Advanced Concrete Technology**

Sl.No	Questions & Options
CO1	Will you be able to describe identify the functional role of aggregate, admixture and cement in concrete and determine its properties as per specifications?
	Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>
CO2	Are you able to Acquire and determine the engineering properties of fresh and hardened concrete?
	Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>
CO3	Can you list and Design a concrete mix using ACI and IS code methods to fulfill the required properties of fresh and hardened concrete?
	Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>
CO4	Can you elect and Design special concretes depending on their specific applications?
	Answer Choice- <i>Very frequently/Frequently/Rarely Very rarely/Never</i>
CO5	Can you Evaluate the effect of structure on service life based on durability and demonstrate the technique of non-destructive testing of concrete?
	Answer Choice- <i>Very high degree/High Degree/Moderate degree/Small Degree/Not at all</i>

**CO->PO MAPPING - 04CE6113 - Advanced Concrete Technology**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	3	3	3					1	3	3
CO2	3	2	3	2					1	1	2
CO3	2	1	2	1							
CO4	1		3	1						1	1
CO5	3	1	3	1					1		3

**CO->PSO MAPPING - 04CE6113 - Advanced Concrete Technology**

CO/PSO	PSO1	PSO2
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CO1	1	2
CO2	1	2
CO3	2	3
CO4	2	1
CO5	2	3

**COURSE->PO MAPPING - 04CE6113 - Advanced Concrete Technology**

04CE6113/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
	3	3	3	3					1	3	3

**COURSE->PSO MAPPING - 04CE6113 - Advanced Concrete Technology**

04CE6113/PSO	PSO1	PSO2
	2	3

**04GN6001**

Course Code	Course Name	L-T-P:C	Year of Introduction
04GN6001	Research Methodology	0-2-0:2	2016

No.	Course Outcome - 04GN6001 - Research Methodology	Target
CO1	To get introduced to research philosophy and processes in general.	60%
CO2	To formulate the research problem and prepare research plan	60%
CO3	Got the basic idea of IPR, copyright and patent for the social development	60%
CO4	To apply various numerical /quantitative techniques for data analysis	60%
CO5	To prepare and communicate the research findings effectively with modern tool	60%

**COURSE END SURVEY - 04GN6001 - Research Methodology**

Sl.No	Questions & Options
CO1	to what extent you understand what is research means and its types
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO2	At what confidence level you are able to formulate and prepare research problem and plan
	Answer Choice- <i>Very high degree/High Degree/Moderate degree/Small Degree/Not at all</i>
CO3	what level you understand the importance of IPR Copy right and patent
	Answer Choice- <i>5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5</i>

CO4	at what extent you apply various numerical /quantitative techniques for data analysis
	Answer Choice- <i>Very advanced/Advanced/Proficient/Basic/ Minimal</i>
CO5	how much you are capable of preparing and communicate the research findings effectively with modern tool
	Answer Choice- <i>Very advanced/Advanced/Proficient/Basic/ Minimal</i>

**CO->PO MAPPING - 04GN6001 - Research Methodology**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3		1								
CO2	3	3	3								
CO3	3	2	3								
CO4	3	1	3								
CO5	3	2	3								

**CO->PSO MAPPING - 04GN6001 - Research Methodology**

CO/PSO	PSO1	PSO2
CO1	1	3
CO2	2	2
CO3		2
CO4	2	1
CO5	2	3

**COURSE->PO MAPPING - 04GN6001 - Research Methodology**

04GN6001/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
	3	3	3								

**COURSE->PSO MAPPING - 04GN6001 - Research Methodology**

04GN6001/PSO	PSO1	PSO2
	2	3

**04CE6193**

Course Code	Course Name	L-T-P:C	Year of Introduction
04CE6193	COMPUTER APPLICATIONS LAB	0-0-2:1	2016

No.	Course Outcome - 04CE6193 - COMPUTER APPLICATIONS LAB	Target
CO1	Familiarization with Primavera P6 software	65%

CO2	Familiarisation with STAAD software	65%
CO3	Familiarisation with ETABS software	65%
CO4	Familiarisation with ANSYS workbench	65%
CO5	Ability to select a suitable tool for a problem	65%

**COURSE END SURVEY - 04CE6193 - COMPUTER APPLICATIONS LAB**

Sl.No	Questions & Options
CO1	Are you familiar with Primavera P6 software?
	Answer Choice- <i>Very advanced/Advanced/Proficient/Basic/ Minimal</i>
CO2	Are you familiar with STAAD?
	Answer Choice- <i>Very advanced/Advanced/Proficient/Basic/ Minimal</i>
CO3	Are you familiar with ETABS?
	Answer Choice- <i>Very advanced/Advanced/Proficient/Basic/ Minimal</i>
CO4	Are you familiar with ANSYS workbench
	Answer Choice- <i>Very advanced/Advanced/Proficient/Basic/ Minimal</i>
CO5	How do you rate your capability to select a suitable tool for a problem?
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>

**CO->PO MAPPING - 04CE6193 - COMPUTER APPLICATIONS LAB**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	1	3								
CO2	3	1	3								
CO3	3	1	3								
CO4	3	1	3								
CO5	3	1	3								

**CO->PSO MAPPING - 04CE6193 - COMPUTER APPLICATIONS LAB**

CO/PSO	PSO1	PSO2
CO1	3	2
CO2	3	2
CO3	3	2
CO4	3	2
CO5	3	2

**COURSE->PO MAPPING - 04CE6193 - COMPUTER APPLICATIONS LAB**

04CE6193/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
	3	1	3								

**COURSE->PSO MAPPING - 04CE6193 - COMPUTER APPLICATIONS LAB**

04CE6193/PSO	PSO1	PSO2
	3	2

**04CE6191**

Course Code	Course Name	L-T-P:C	Year of Introduction
04CE6191	Seminar	0-0-2:2	2016

No.	Course Outcome - 04CE6191 - Seminar	Target
CO1	Understand the basic structure of a scientific paper	51%
CO2	Acquire knowledge on latest developments on a specific area of interest by literature survey and discussions	52%
CO3	Collect required scientific papers (journal, conference etc.)and systematically arrange them using a reference manager	50%
CO4	Understand the gaps in literature on a specific topic	50%
CO5	Write a report based on the papers read	51%

**COURSE END SURVEY - 04CE6191 - Seminar**

Sl.No	Questions & Options
CO1	at what level is your ability to understand the basic structure of a scientific/technical paper? Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO2	By the literature survey conducted, were you able to understand the current status of developments took place in specific area of your project? Answer Choice- <i>Very high degree/High Degree/Moderate degree/Small Degree/Not at all</i>
CO3	During the project work, you were able to collect and arrange all the required technical papers and text books etc. Agree? Answer Choice- <i>Strongly Agree/Agree/Neutral Disagree/Strongly disagree</i>
CO4	To what level, you were able to Understand the gaps in literature on the chosen specific topic? Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO5	Are you and your project guide satisfied with the report written by you based on your literature survey conducted?

Answer Choice- *Very satisfied/Satisfied/Neither satisfied nor dissatisfied/Dissatisfied /Very dissatisfied*

**CO->PO MAPPING - 04CE6191 - Seminar**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1											
CO2											
CO3											
CO4											
CO5											

**CO->PSO MAPPING - 04CE6191 - Seminar**

CO/PSO	PSO1	PSO2
CO1		
CO2		
CO3		
CO4		
CO5		

**COURSE->PO MAPPING - 04CE6191 - Seminar**

04CE6191/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11

**COURSE->PSO MAPPING - 04CE6191 - Seminar**

04CE6191/PSO	PSO1	PSO2

**SEMESTER-2**
**04CE6102**

Course Code	Course Name	L-T-P:C	Year of Introduction
04CE6102	Bridge Engineering	4-0-0:4	2016

No.	Course Outcome - 04CE6102 - Bridge Engineering	Target
CO1	To develop an understanding various consideration to be taken into account for bridge design	50%
CO2	To develop an understanding about the use of IRC standards and design the deck slab	51%
CO3	To develop an understanding for design of T beam bridges	53%

CO4	To design bridge bearings and detail bridge foundation	49%
CO5	5. To carry out the inspection and suggest maintenance works required for existing bridges.	51%

**COURSE END SURVEY - 04CE6102 - Bridge Engineering**

Sl.No	Questions & Options
CO1	How familiar are you in using IRC standards
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO2	Are you confident enough to calculate the loads coming on a T Beam and design the same?
	Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>
CO3	How well you can assess the stability of a bridge pier?
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO4	How well you understood the concept of providing bearing in a bridge?
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO5	How efficiently can you suggest various maintainance measures while inspecting a bridge?
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>

**CO->PO MAPPING - 04CE6102 - Bridge Engineering**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	2	2	3	2	1	1	2	3	3	1	1
CO2	2	2	3	3	3	2	3	3	1	3	1
CO3	2	2	3	2	3	2	3	3	1	3	1
CO4	2	2	3	3	3	2	3	3	1	3	1
CO5	2	3	3	2	2	2	3	3	2	3	1

**CO->PSO MAPPING - 04CE6102 - Bridge Engineering**

CO/PSO	PSO1	PSO2
CO1	1	3
CO2	1	3
CO3	1	3
CO4	1	3
CO5	1	3

**COURSE->PO MAPPING - 04CE6102 - Bridge Engineering**

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11



04CE6102/PO	2	3	3	3	3	2	3	3	3	3	1
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**COURSE->PSO MAPPING - 04CE6102 - Bridge Engineering**

04CE6102/PSO	PSO1	PSO2
	1	3

**04CE6104**

Course Code	Course Name	L-T-P:C	Year of Introduction
04CE6104	Finite Element Analysis	3-0-0:3	2016

No.	Course Outcome - 04CE6104 - Finite Element Analysis	Target
CO1	Demonstrate the theoretical basis of General procedure of FEA	55%
CO2	Perform finite element formulations for simple engineering problems	55%
CO3	Derive shape functions using different methods	55%
CO4	Derive stiffness matrix for various elements	55%
CO5	Model complex geometry problems using finite element technology	55%
CO6	Illustrate the theory of plate bending.	55%

**COURSE END SURVEY - 04CE6104 - Finite Element Analysis**

Sl.No	Questions & Options
CO1	To what extent you are able to demonstrate general procedure of FEA?
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO2	To what extent you are able to perform finite element formulations for simple engineering problems?
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO3	To what extent you are able to derive shape functions using different methods?
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO4	To what extent you are able to derive stiffness matrix for various elements?
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO5	To what extent you are able to model complex geometry problems using finite element technique?
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO6	To what extent you are able to illustrate theory of plate bending?
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>

**CO->PO MAPPING - 04CE6104 - Finite Element Analysis**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	3	3								
CO2	2	2	1								
CO3	2		1								
CO4	2		1								
CO5	3	3	3								
CO6	3	2	1								

**CO->PSO MAPPING - 04CE6104 - Finite Element Analysis**

CO/PSO	PSO1	PSO2
CO1	3	1
CO2	3	
CO3	2	
CO4	2	
CO5	3	1
CO6	3	1

**COURSE->PO MAPPING - 04CE6104 - Finite Element Analysis**

04CE6104/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
	3	3	3								

**COURSE->PSO MAPPING - 04CE6104 - Finite Element Analysis**

04CE6104/PSO	PSO1	PSO2
	3	1

**04CE6106**

Course Code	Course Name	L-T-P:C	Year of Introduction
04CE6106	Theory of Plates and Shells	3-0-0:3	2016

No.	Course Outcome - 04CE6106 - Theory of Plates and Shells	Target
CO1	Possess a good understanding of the classification of plates and formulation of differential equation	59%
CO2	Derive different relationships in Pure bending of plates	59%
CO3	Analyse and solve laterally loaded rectangular plates at different boundary conditions	59%

CO4	Solve simply supported rectangular plates under different loading conditions	59%
CO5	Analyse circular plates using polar coordinates	59%
CO6	Analyse shell structures and folded plates	59%

**COURSE END SURVEY - 04CE6106 - Theory of Plates and Shells**

Sl.No	Questions & Options
CO1	To what extend you are able to formulate differential equation of plates
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO2	To what extend you are able to derive different relationships in Pure bending of plates
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO3	To what extend you are able to Analyse and solve laterally loaded rectangular plates at different boundary conditions
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO4	To what extend you are able to solve simply supported rectangular plates under different loading conditions
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO5	To what extend you are able to analyse circular plates using polar coordinates
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO6	To what extend you are able to analyse shell structures and folded plates
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>

**CO->PO MAPPING - 04CE6106 - Theory of Plates and Shells**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	2	3								
CO2	2		2								
CO3	2		3								
CO4	3		2								
CO5	3	2	2								
CO6	3	2	1								

**CO->PSO MAPPING - 04CE6106 - Theory of Plates and Shells**

CO/PSO	PSO1	PSO2
CO1	3	1
CO2	2	
CO3	3	1

CO4	2	
CO5	3	1
CO6	3	1

**COURSE->PO MAPPING - 04CE6106 - Theory of Plates and Shells**

04CE6106/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
	3	2	3								

**COURSE->PSO MAPPING - 04CE6106 - Theory of Plates and Shells**

04CE6106/PSO	PSO1	PSO2
	3	1

**04CE6116**

Course Code	Course Name	L-T-P:C	Year of Introduction
04CE6116	Microstructure and Innovations in Structural Concrete	3-0-0:3	2016

No.	Course Outcome - 04CE6116 - Microstructure and Innovations in Structural Concrete	Target
CO1	Describe the structure of concrete and interpret the structure property relationships with respect to strength, dimensional stability and durability.	65%
CO2	Demonstrate tests to determine the fresh properties and design a mix proportion for SCC . Evaluate the requirements and engineering properties of SCC in terms of its fresh and hardened state.	65%
CO3	Describe the different methods of testing of concrete at elevated temperatures and discuss its behaviour.	55%
CO4	Compare the behavior of supplementary cementitious materials such as Fly Ash , GGBS, silica fume, Metakaolin, Rice husk ash in concrete.	70%
CO5	Describe the methods ( XRD, SEM,TGA) for micro structural analysis of concrete specimens. and interpret its results.	50%

**COURSE END SURVEY - 04CE6116 - Microstructure and Innovations in Structural Concrete**

Sl.No	Questions & Options
CO1	To what extent are you able to describe the structure of concrete and interpret the structure property relationships ?
	Answer Choice- <i>Very high degree/High Degree/Moderate degree/Small Degree/Not at all</i>
CO2	Will you be able to suggest test methods and evaluate the properties of Self compacting concrete?
	Answer Choice- <i>5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5</i>
CO3	To what extent are you able to describe the different methods of testing of concrete at elevated temperatures and discuss its behaviour?

	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO4	To what extent are you able to compare the behavior of supplementary cementitious materials such as Fly Ash , GGBS, Silica Fume, Metakaolin, Rice husk ash in concrete
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO5	To what extent are you aware of the different instrumental methods of material microstructure analysis with respect to concrete ?
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5

**CO->PO MAPPING - 04CE6116 - Microstructure and Innovations in Structural Concrete**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	2	1	3	1	1		1	3	2	
CO2	3	2	1	3	1			2	2	1	
CO3	2	2		3	2			1	2		
CO4	3	2	1	3	1			1	2	3	
CO5	3	2		3	2			2	3	1	

**CO->PSO MAPPING - 04CE6116 - Microstructure and Innovations in Structural Concrete**

CO/PSO	PSO1	PSO2
CO1		2
CO2		1
CO3		
CO4		3
CO5		

**COURSE->PO MAPPING - 04CE6116 - Microstructure and Innovations in Structural Concrete**

04CE6116/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
	3	2	1	3	2	1		2	3	3	

**COURSE->PSO MAPPING - 04CE6116 - Microstructure and Innovations in Structural Concrete**

04CE6116/PSO	PSO1	PSO2
		3

**04CE6118**

Course Code	Course Name	L-T-P:C	Year of Introduction
04CE6118	Earthquake Resistant Design	3-0-0:3	2016

No.	Course Outcome - 04CE6118 - Earthquake Resistant Design	Target
CO1	To understand the extent of hazards caused due to earthquakes at various locations.	55%
CO2	To carry out dynamic analysis of civil engineering structures under seismic forces.	50%
CO3	To propose different types of structural systems in seismic prone areas.	60%
CO4	To carry out structural design of various types of buildings considering seismic forces.	55%
CO5	To arrive at various damping / base isolation systems for high rise buildings.	55%

**COURSE END SURVEY - 04CE6118 - Earthquake Resistant Design**

Sl.No	Questions & Options
CO1	How effectively can you carry out disaster management at an earthquake affected area?
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO2	How well you understood the concept of base shear?
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO3	Planning of a proper structural form reduces earthquake hazards due to building collapse. Your opinion.
	Answer Choice- Strongly Agree/Agree/Neutral Disagree/Strongly disagree
CO4	To what extend will you be able to carry out seismic analysis of a building ?
	Answer Choice- Very advanced/Advanced/Proficient/Basic/ Minimal
CO5	Can you suggest various damping measures for different high rise buildings?
	Answer Choice- Always/Very often/Sometimes/Rarely/Never

**CO->PO MAPPING - 04CE6118 - Earthquake Resistant Design**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	2	3									
CO2	1	2	3								
CO3	3	2	2								
CO4	2	3	3								
CO5	2	2	2								

**CO->PSO MAPPING - 04CE6118 - Earthquake Resistant Design**

CO/PSO	PSO1	PSO2
CO1	1	3
CO2	1	
CO3	1	2

CO4	2	2
CO5	1	

**COURSE->PO MAPPING - 04CE6118 - Earthquake Resistant Design**

04CE6118/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
	3	3	3								

**COURSE->PSO MAPPING - 04CE6118 - Earthquake Resistant Design**

04CE6118/PSO	PSO1	PSO2
	2	3

**04CE6192**

Course Code	Course Name	L-T-P:C	Year of Introduction
04CE6192	Mini Project	0-0-4:2	2016

No.	Course Outcome - 04CE6192 - Mini Project	Target
CO1	Students should be able to review literature to find feasible solutions for a problem	61%
CO2	Students should systematically analyse a problem and develop objective statements	61%
CO3	Students should be able to develop a scientific method to reach an objective	61%
CO4	Students should be able to communicate and convince others on the method of achieving an objective	61%
CO5	Students should be able to properly document a work plan/work report	61%

**COURSE END SURVEY - 04CE6192 - Mini Project**

Sl.No	Questions & Options
CO1	Can you review literature to find feasible solutions for a problem?
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO2	Can you systematically analyse a problem and develop objective statements?
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO3	Can you develop a scientific method to reach an objective ?
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO4	Can you communicate and convince others on the method of achieving an objective?
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO5	Can you properly document a work plan/work report?

Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5

**CO->PO MAPPING - 04CE6192 - Mini Project**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	3	2								
CO2	3	2	1								
CO3	3	3	1								
CO4	3	3	1								
CO5	3	3	1								

**CO->PSO MAPPING - 04CE6192 - Mini Project**

CO/PSO	PSO1	PSO2
CO1	1	2
CO2	1	2
CO3	1	2
CO4	1	2
CO5	1	2

**COURSE->PO MAPPING - 04CE6192 - Mini Project**

04CE6192/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
	3	3	2								

**COURSE->PSO MAPPING - 04CE6192 - Mini Project**

04CE6192/PSO	PSO1	PSO2
	1	2

**04CE6194**

Course Code	Course Name	L-T-P:C	Year of Introduction
04CE6194	Structural Engineering Lab	0-0-2:1	2016

No.	Course Outcome - 04CE6194 - Structural Engineering Lab	Target
CO1	Identify the variation in mix proportion for various designed strength with and without admixture	70.5%
CO2	Evaluate the differences between tensile and flexural strengths with various grades of concrete.	70.5%
CO3	Differentiate between shear, flexural and buckling behaviors and carry out free vibration analysis of RCC beams and columns.	70.5%



CO4	Evaluate the properties of materials for required behavior of concrete.	70.5%
CO5	Demonstrate NDT tests in concrete, surface hardness and internal density of concrete.	70.5%

**COURSE END SURVEY - 04CE6194 - Structural Engineering Lab**

Sl.No	Questions & Options
CO1	To what extent you are able to identify the variation in concrete based on various strength with and without admixture?
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO2	How far you are able to evaluate the difference in tensile and flexural properties of concrete with various grade?
	Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>
CO3	How far you are able to differentiate between shear, flexural and free vibration of RCC beams and columns?
	Answer Choice- <i>5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5</i>
CO4	To what extent can you evaluate the properties of materials for the required behavior of concrete?
	Answer Choice- <i>Very advanced/Advanced/Proficient/Basic/ Minimal</i>
CO5	How far can you demonstrate NDT tests in concrete, surface hardness and internal density of concrete?
	Answer Choice- <i>5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5</i>

**CO->PO MAPPING - 04CE6194 - Structural Engineering Lab**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3		3								
CO2	3	1	3								
CO3	2	1	3								
CO4	2	2	2								
CO5	3	2	2								

**CO->PSO MAPPING - 04CE6194 - Structural Engineering Lab**

CO/PSO	PSO1	PSO2
CO1	1	3
CO2	3	1
CO3	3	1
CO4		3
CO5	1	3

**COURSE->PO MAPPING - 04CE6194 - Structural Engineering Lab**

04CE6194/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
	3	2	3								

**COURSE->PSO MAPPING - 04CE6194 - Structural Engineering Lab**

04CE6194/PSO	PSO1	PSO2
	3	3

**04CE6124**

Course Code	Course Name	L-T-P:C	Year of Introduction
04CE6124	Design of substructure	3-0-0:3	2016

No.	Course Outcome - 04CE6124 - Design of substructure	Target
CO1	To understand the purpose for design of substructure	51%
CO2	To evaluate settlements that can occur in various types of foundations	49%
CO3	To design various types of Substructural elements	49%
CO4	To foresee the issues that can occur in foundation design and construction	52%
CO5	To propose alternative design for foundations in expansive soils	50%

**COURSE END SURVEY - 04CE6124 - Design of substructure**

Sl.No	Questions & Options
CO1	How well can you evaluate the design loads for design of foundation
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO2	How well can you evaluate the settlements that may happen in a type of foundation?
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO3	How well can you select a type of foundation?
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO4	How confident are you in foreseeing the issues that occur during a foundation design?
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO5	How effectively can you suggest alternative foundation if a particular type of designed foundation is not suitable?
	Answer Choice- <i>Very high degree/High Degree/Moderate degree/Small Degree/Not at all</i>

**CO->PO MAPPING - 04CE6124 - Design of substructure**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
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CO1	3	2	2	1	1	3	3	2	2	3	1
CO2	3	3	2	1	1	3	3	2	2	3	1
CO3	3	1	2	1	1	3	3	2	2	3	1
CO4	2	3	2	1	1	3	3	2	2	3	1
CO5	3	2	2	2	1	2	3	2	2	3	1

**CO->PSO MAPPING - 04CE6124 - Design of substructure**

CO/PSO	PSO1	PSO2
CO1		
CO2		
CO3		
CO4		
CO5		

**COURSE->PO MAPPING - 04CE6124 - Design of substructure**

04CE6124/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
	3	3	2	2	1	3	3	2	2	3	1

**COURSE->PSO MAPPING - 04CE6124 - Design of substructure**

04CE6124/PSO	PSO1	PSO2

**04CE6108**

Course Code	Course Name	L-T-P:C	Year of Introduction
04CE6108	Advanced Analysis of Structures	3-0-0:3	2016

No.	Course Outcome - 04CE6108 - Advanced Analysis of Structures	Target
CO1	To make students to have a new perspective of work and energy principles, Maxwell, Betti, Castigliano theorems, using principles virtual work	50%
CO2	To be able to Classify structures into discrete and continuous structures, evaluate static& kinematic indeterminacy (degrees of freedom), coordinate systems, element stiffness matrix.	50%
CO3	To make capable of formulating stiffness matrices and load vectors for pin jointed frames (including temperature effect, lack of fit), continuous beams (including settlement of supports), rigid jointed frames and grids.	50%
CO4	To make capable of applying Direct stiffness approach by assembling stiffness matrix and equivalent joint load (incorporating boundary conditions) and to solve by Gauss elimination method for matrix inversion. Apply to pin jointed frames, continuous beams.	45%

CO5	To formulate Element Flexibility matrices for truss element and beam element, use force transformation matrix if required and solve for equilibrium and compatibility	45%
CO6	To be able to Analyse beams & frames (rigid and pin jointed), grids by Flexibility and stiffness matrix methods	45%

**COURSE END SURVEY - 04CE6108 - Advanced Analysis of Structures**

Sl.No	Questions & Options
CO1	what is your level of understanding in energy principles with respect to Maxwell, Betti and Castigliano's theorems? Answer Choice- <i>Very high degree/High Degree/Moderate degree/Small Degree/Not at all</i>
CO2	Rate your present ability to evaluate degree of static and kinematic degrees of indeterminacy of skeletal structures. Answer Choice- <i>Very high degree/High Degree/Moderate degree/Small Degree/Not at all</i>
CO3	rate your gained ability in formulating stiffness matrices and load vectors for trusses and frames. Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>
CO4	Are you satisfied with classes taken on direct stiffness approach of assembling and solving problems by Gauss elimination method? Answer Choice- <i>Very satisfied/Satisfied/Neither satisfied nor dissatisfied/Dissatisfied /Very dissatisfied</i>
CO5	How much confident you are, in formulating flexibility matrices for elements of truss, beam, frame etc? Answer Choice- <i>Very high degree/High Degree/Moderate degree/Small Degree/Not at all</i>
CO6	How do you rate your capability in analyzing beams and frames using stiffness matrix methods? Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>

**CO->PO MAPPING - 04CE6108 - Advanced Analysis of Structures**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	1	1	1					1		
CO2	3	1	1					1	1		1
CO3	2	1	3	1	2						1
CO4	3	3	3	2	3	1			1		
CO5	2	3	3	1	2				1		
CO6	3	3	3	2	3	1			1		

**CO->PSO MAPPING - 04CE6108 - Advanced Analysis of Structures**

CO/PSO	PSO1	PSO2
CO1	1	
CO2	1	

CO3	3	
CO4	3	
CO5	2	
CO6	3	

**COURSE->PO MAPPING - 04CE6108 - Advanced Analysis of Structures**

04CE6108/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
	3	3	3	2	3	1		1	1		1

**COURSE->PSO MAPPING - 04CE6108 - Advanced Analysis of Structures**

04CE6108/PSO	PSO1	PSO2
	3	

**04CE6404**

Course Code	Course Name	L-T-P:C	Year of Introduction
04CE6404	Finite Element Analysis	3-0-0:3	2016

No.	Course Outcome - 04CE6404 - Finite Element Analysis	Target
CO1	Possess a good understanding of the theoretical basis of General procedure of FEA	55%
CO2	Perform finite element formulations for simple engineering problems	55%
CO3	Derive shape functions using different methods	55%
CO4	Derive stiffness matrix for various elements	55%
CO5	Model complex geometry problems using finite element technology	55%
CO6	Possess a good understanding of plate bending theory	55%

**COURSE END SURVEY - 04CE6404 - Finite Element Analysis**

Sl.No	Questions & Options
CO1	To what extend you are able to understand general procedure of FEA
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO2	To what extend you are able to perform finite element formulations for simple engineering problems
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO3	To what extend you are able to derive shape functions using different methods
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>

CO4	To what extend you are able to derive stiffness matrix for various elements
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO5	To what extend you are able to model complex geometry problems using finite element technology
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO6	To what extend you are able to understand plate bending theory
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>

**CO->PO MAPPING - 04CE6404 - Finite Element Analysis**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1											
CO2											
CO3											
CO4											
CO5											
CO6											

**CO->PSO MAPPING - 04CE6404 - Finite Element Analysis**

CO/PSO	PSO1	PSO2
CO1		
CO2		
CO3		
CO4		
CO5		
CO6		

**COURSE->PO MAPPING - 04CE6404 - Finite Element Analysis**

04CE6404/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11

**COURSE->PSO MAPPING - 04CE6404 - Finite Element Analysis**

04CE6404/PSO	PSO1	PSO2

**04CE6406**

Course Code	Course Name	L-T-P:C	Year of Introduction
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04CE6406	Theory of Plates and Shells	3-0-0:3	2016
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No.	Course Outcome - 04CE6406 - Theory of Plates and Shells	Target
CO1	Possess a good understanding of the classification of plates and formulation of differential equation	60%
CO2	Derive different relationships in Pure bending of plates	60%
CO3	Analyse and solve laterally loaded rectangular plates at different boundary conditions	60%
CO4	Solve simply supported rectangular plates under different loading conditions	60%
CO5	Analyse circular plates using polar coordinates	60%
CO6	Analyse shell structures and folded plates	60%

**COURSE END SURVEY - 04CE6406 - Theory of Plates and Shells**

Sl.No	Questions & Options
CO1	To what extend you are able to formulate differential equation of plates
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO2	To what extend you are able to derive different relationships in Pure bending of plates
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO3	To what extend you are able to analyse and solve laterally loaded rectangular plates at different boundary conditions
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO4	To what extend you are able to solve simply supported rectangular plates under different loading conditions
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO5	To what extend you are able to analyse circular plates using polar coordinates
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO6	To what extend you are able to analyse shell structures and folded plates
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>

**CO->PO MAPPING - 04CE6406 - Theory of Plates and Shells**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	2	3	2				1	3	2	
CO2	3	3	3	1			1		3	2	
CO3	3	3	3	2				2	3	3	2
CO4	3	3	3	2		2	2	1	3	3	2
CO5	3	3	3	2	1	2	2	1	3	3	2

CO6	3	3	3	1	1	2	2	1	3	3	2
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**CO->PSO MAPPING - 04CE6406 - Theory of Plates and Shells**

CO/PSO	PSO1	PSO2
CO1	2	2
CO2	2	3
CO3	2	3
CO4	1	2
CO5	2	2
CO6	2	2

**COURSE->PO MAPPING - 04CE6406 - Theory of Plates and Shells**

04CE6406/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
	3	3	3	2	1	2	2	2	3	3	2

**COURSE->PSO MAPPING - 04CE6406 - Theory of Plates and Shells**

04CE6406/PSO	PSO1	PSO2
	2	3

**04CE6112**

Course Code	Course Name	L-T-P:C	Year of Introduction
04CE6112	Computer Aided Design	3-0-0:3	2016

No.	Course Outcome - 04CE6112 - Computer Aided Design	Target
CO1	hardware requirements, interactive graphics	60.5%
CO2	Popular CAD packages, global co- ordinate system, Local co-ordinate systems, Edit Input-Command Formats-Text Input	60%
CO3	Graphical Input Generation - "Concurrent" Verifications, Generation–Dimensioning-loading- Analysis	60%
CO4	Construction activities:- The critical path methodDefinitions of terms and symbols- Steps in critical path schedulingDeveloping a critical path schedule - Determining free floatDetermining total cost of project	59%
CO5	Manual versus Computer analysis of critical path methods–Popular packages in Construction Management and MIS.	61%
CO6	Information types and uses:- General application software's- Civil engineering packages, Project management software, advanced structural engineering software's, Expert systems for construction.	60.5%

**COURSE END SURVEY - 04CE6112 - Computer Aided Design**



Sl.No	Questions & Options
CO1	CO2
CO3	CO4
CO5	CO6

**CO->PO MAPPING - 04CE6112 - Computer Aided Design**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1				1	3	2			1		
CO2	1			1					1		
CO3	1				2				1		
CO4		2		1	2	2	3	1	1		1
CO5		2		1	1	2	2		1		
CO6				1	2			1	1		

**CO->PSO MAPPING - 04CE6112 - Computer Aided Design**

CO/PSO	PSO1	PSO2
CO1	1	
CO2		
CO3		
CO4		
CO5		
CO6		

**COURSE->PO MAPPING - 04CE6112 - Computer Aided Design**

04CE6112/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
	1	2		1	3	2	3	1	1		1

**COURSE->PSO MAPPING - 04CE6112 - Computer Aided Design**

04CE6112/PSO	PSO1	PSO2
	1	

**04CE6114**

Course Code	Course Name	L-T-P:C	Year of Introduction
04CE6114	Structural Optimization	3-0-0:3	2016

**COURSE END SURVEY - 04CE6114 - Structural Optimization****CO->PO MAPPING - 04CE6114 - Structural Optimization**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
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**CO->PSO MAPPING - 04CE6114 - Structural Optimization**

CO/PSO	PSO1	PSO2
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**COURSE->PO MAPPING - 04CE6114 - Structural Optimization**

04CE6114/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11

**COURSE->PSO MAPPING - 04CE6114 - Structural Optimization**

04CE6114/PSO	PSO1	PSO2

**SEMESTER-3****04CE7107**

Course Code	Course Name	L-T-P:C	Year of Introduction
04CE7107	Design of Tall Buildings	3-0-0:3	2016

No.	Course Outcome - 04CE7107 - Design of Tall Buildings	Target
CO1	1. To understand various design philosophies and other considerations to be adopted in design of tall buildings	50%
CO2	2. To analyse the vertical and horizontal load calculations in tall buildings and different systems of load distribution.	48%
CO3	3. To propose various structural forms those are suitable for design of a structure.	51%
CO4	4. To understand the significance of structural modeling and design for primary and secondary analysis.	52%
CO5	5. To evaluate how tall buildings deform under various loading conditions.	52%

**COURSE END SURVEY - 04CE7107 - Design of Tall Buildings**

Sl.No	Questions & Options
CO1	CO2
CO3	CO4
CO5	

**CO->PO MAPPING - 04CE7107 - Design of Tall Buildings**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	2	2	2								

CO2	2	2	3								
CO3	2		2								
CO4	2	2	2								
CO5	3	2	3								

**CO->PSO MAPPING - 04CE7107 - Design of Tall Buildings**

CO/PSO	PSO1	PSO2
CO1	3	1
CO2	3	
CO3	3	1
CO4	2	
CO5	2	

**COURSE->PO MAPPING - 04CE7107 - Design of Tall Buildings**

04CE7107/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
	3	2	3								

**COURSE->PSO MAPPING - 04CE7107 - Design of Tall Buildings**

04CE7107/PSO	PSO1	PSO2
	3	1

**04CE7113**

Course Code	Course Name	L-T-P:C	Year of Introduction
04CE7113	Maintenance & Rehabilitation of Structures	3-0-0:3	2016

No.	Course Outcome - 04CE7113 - Maintenance & Rehabilitation of Structures	Target
CO1	Relate the impact of quality of construction and properties of concrete with mechanism of deterioration of RCC structures	63%
CO2	The course should provide the students with an understanding of the typical mechanisms of deterioration of reinforced concrete structures and ability to predict the service life	63%
CO3	Basic understanding of methods for maintenance and repair of concrete structures	63%
CO4	Basic understanding of methods for inspection of concrete structures - both field and laboratory methods	63%
CO5	Students should be able to suggest mitigating measures and repair strategies	63%

**COURSE END SURVEY - 04CE7113 - Maintenance & Rehabilitation of Structures**

Sl.No	Questions & Options
CO1	how effective the quality of construction is important to save RCC structure deterioration
	Answer Choice- <i>Very high degree/High Degree/Moderate degree/Small Degree/Not at all</i>
CO2	how much is the important of mechanism of deterioration of RCC to predict the service life
	Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>
CO3	how much you understand the maintenance and repair of concrete structure
	Answer Choice- <i>5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5</i>
CO4	how much you understand the inspection methods for repair and maintenance
	Answer Choice- <i>5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5</i>
CO5	how much you are capable now to suggest mitigation measure and repair strategies
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>

**CO->PO MAPPING - 04CE7113 - Maintenance & Rehabilitation of Structures**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	1	3								
CO2	3	2	2								
CO3	2	1	2								
CO4	1	1	2								
CO5	2	3	3								

**CO->PSO MAPPING - 04CE7113 - Maintenance & Rehabilitation of Structures**

CO/PSO	PSO1	PSO2
CO1	3	3
CO2	3	3
CO3	2	2
CO4	2	
CO5	3	1

**COURSE->PO MAPPING - 04CE7113 - Maintenance & Rehabilitation of Structures**

04CE7113/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
	3	3	3								

**COURSE->PSO MAPPING - 04CE7113 - Maintenance & Rehabilitation of Structures**

	PSO1	PSO2

04CE7113/PSO	3	3
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**04CE7191**

Course Code	Course Name	L-T-P:C	Year of Introduction
04CE7191	Seminar -II	0-0-2:2	2016

No.	Course Outcome - 04CE7191 - Seminar -II	Target
CO1	1. Acquire knowledge on latest developments on a specific area of interest	50%
CO2	2. Logically connect the works done by different authors in the same area	62%
CO3	3. Understand the gaps in literature on a specific topic	62%
CO4	4. Identify research works that could be done in the immediate future	62%
CO5	5. Write report and make presentations on the area studied	62%

**COURSE END SURVEY - 04CE7191 - Seminar -II**

Sl.No	Questions & Options
CO1	how much knowledge gather on latest development on your specific area of interest
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO2	how much you are able to logically connect the different author in the same area
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO3	how much you are able to find the literature gap
	Answer Choice- <i>Excellent/Very Good/Good/Satisfactory/Poor</i>
CO4	how much idea gather for your next research
	Answer Choice- <i>5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5</i>
CO5	how much satisfaction gain in preparing the report
	Answer Choice- <i>Excellent/Very Good/Good Satisfactory/Needs improvement</i>

**CO->PO MAPPING - 04CE7191 - Seminar -II**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	2	3								
CO2	3	3	3								
CO3	3	3	3								
CO4	3	2	3								

CO5	3	3	3								
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**CO->PSO MAPPING - 04CE7191 - Seminar -II**

CO/PSO	PSO1	PSO2
CO1	3	3
CO2	3	3
CO3	3	3
CO4	3	3
CO5	3	3

**COURSE->PO MAPPING - 04CE7191 - Seminar -II**

04CE7191/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
	3	3	3								

**COURSE->PSO MAPPING - 04CE7191 - Seminar -II**

04CE7191/PSO	PSO1	PSO2
	3	3

**04CE7193**

Course Code	Course Name	L-T-P:C	Year of Introduction
04CE7193	Project (Phase 1)	0-0-12:6	2016

No.	Course Outcome - 04CE7193 - Project (Phase 1)	Target
CO1	Review literature to find feasible solutions for a problem	62.5%
CO2	Systematically analyse a problem and develop objective statements	62.5%
CO3	Develop a scientific method to reach an objective	62.5%
CO4	Communicate and convince others on the method of achieving an objective	62.5%
CO5	Properly document a work plan/work report	62.5%

**COURSE END SURVEY - 04CE7193 - Project (Phase 1)**

Sl.No	Questions & Options
CO1	How do you rate your capability to review literature to find feasible solutions for a problem
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO2	How do you rate your capability to systematically analyse a problem and develop objective statements

	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO3	How do you rate your capability to develop a scientific method to reach an objective
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO4	How do you rate your capability to communicate and convince others on the method of achieving an objective
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>
CO5	How do you rate your capability to properly document a work plan/work report
	Answer Choice- <i>Excellent/Very Good/Good/Fair/Poor</i>

**CO->PO MAPPING - 04CE7193 - Project (Phase 1)**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1											
CO2											
CO3											
CO4											
CO5											

**CO->PSO MAPPING - 04CE7193 - Project (Phase 1)**

CO/PSO	PSO1	PSO2
CO1		
CO2		
CO3		
CO4		
CO5		

**COURSE->PO MAPPING - 04CE7193 - Project (Phase 1)**

04CE7193/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11

**COURSE->PSO MAPPING - 04CE7193 - Project (Phase 1)**

04CE7193/PSO	PSO1	PSO2

**04CE7101**

Course Code	Course Name	L-T-P:C	Year of Introduction
04CE7101	Design of Steel concrete composite structures	3-0-0:3	2016

No.	Course Outcome - 04CE7101 - Design of Steel concrete composite structures	Target
CO1	T1. To get introduced to composite construction and composite behavior of steel concrete composite structures.	51%
CO2	To design various steel concrete composite members	52%
CO3	To understand the function and design of various connectors	52%
CO4	Carry out case studies on Steel composite construction	50%
CO5	To understand how composite structures behave under seismic loading	52%

**COURSE END SURVEY - 04CE7101 - Design of Steel concrete composite structures**

Sl.No	Questions & Options
CO1	How effective is your basics in steel concrete composite construction?
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO2	How capable are you in designing composite members?
	Answer Choice- Excellent/Very Good/Good Satisfactory/Needs improvement
CO3	How capable are you in designing various connectors?
	Answer Choice- Very advanced/Advanced/Proficient/Basic/ Minimal
CO4	How the case studies enhanced your knowledge in steel concrete composite construction?
	Answer Choice- Extremely helpful/Moderately helpful/ Helpful/A little helpful/Not at all helpful
CO5	How capable are you analysing seismic behaviour of steel concrete composite buildings?
	Answer Choice- Excellent/Very Good/Good Satisfactory/Needs improvement

**CO->PO MAPPING - 04CE7101 - Design of Steel concrete composite structures**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	2	1								
CO2	2	2									
CO3	1	1									
CO4		1									
CO5	2	2									

**CO->PSO MAPPING - 04CE7101 - Design of Steel concrete composite structures**

CO/PSO	PSO1	PSO2
CO1	2	1
CO2	2	



CO3	2	
CO4	2	1
CO5	2	1

**COURSE->PO MAPPING - 04CE7101 - Design of Steel concrete composite structures**

04CE7101/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
	3	2	1								

**COURSE->PSO MAPPING - 04CE7101 - Design of Steel concrete composite structures**

04CE7101/PSO	PSO1	PSO2
	2	1

**SEMESTER-4**
**04CE7194**

Course Code	Course Name	L-T-P:C	Year of Introduction
04CE7194	Project (Phase -II)	0-0-21:12	2016

No.	Course Outcome - 04CE7194 - Project (Phase -II)	Target
CO1	Students should be able to review literature to find feasible solutions for a problem	70%
CO2	Students should systematically analyse a problem and develop objective statements	70%
CO3	Students develop a scientific method to reach an objective	70%
CO4	Students should be able to communicate and convince others on the method of achieving an objective	70%
CO5	Students should be able to properly document a work plan/work report	70%

**COURSE END SURVEY - 04CE7194 - Project (Phase -II)**

Sl.No	Questions & Options
CO1	Can you to review literature to find feasible solutions for a problem?
	Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>
CO2	Can you systematically analyse a problem and develop objective statements?
	Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>
CO3	Can you develop a scientific method to reach an objective ?
	Answer Choice- <i>Always/Very often/Sometimes/Rarely/Never</i>

CO4	Can you communicate and convince others on the method of achieving an objective?
	Answer Choice- 5 out of 5/4 out of 5/3 out of 5/2 out of 5/1 out of 5
CO5	Can you properly document a work plan/work report ?
	Answer Choice- Always/Very often/Sometimes/Rarely/Never

**CO->PO MAPPING - 04CE7194 - Project (Phase -II)**

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	3	2								
CO2	3	2	1								
CO3	3	3	1								
CO4	3	3	1								
CO5	3	3	1								

**CO->PSO MAPPING - 04CE7194 - Project (Phase -II)**

CO/PSO	PSO1	PSO2
CO1	1	2
CO2	1	2
CO3	1	2
CO4	1	2
CO5	1	2

**COURSE->PO MAPPING - 04CE7194 - Project (Phase -II)**

04CE7194/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
	3	3	2								

**COURSE->PSO MAPPING - 04CE7194 - Project (Phase -II)**

04CE7194/PSO	PSO1	PSO2
	1	2

**PhD-PhD in Civil Engineering****SEMESTER-1****04GN6001**

Course Code	Course Name	L-T-P:C	Year of Introduction
04GN6001	Research Methodology	0-2-0:2	2016

**COURSE END SURVEY - 04GN6001 - Research Methodology**  
**CO->PO MAPPING - 04GN6001 - Research Methodology**  
**CO->PSO MAPPING - 04GN6001 - Research Methodology**  
**COURSE->PO MAPPING - 04GN6001 - Research Methodology**  
**COURSE->PSO MAPPING - 04GN6001 - Research Methodology**

## CONTINUOUS IMPROVEMENT IMPLEMENTED

### Measures identified & Implemented Via AddOn, Bridge, MOOC, Conference, Workshop, Internship & Project

No	Course	Type
1	Geo-Environmental Engineering	Honours Course
2	CE371 Environment and Pollution	Honours Course
3	Air Quality Management	Honours Course
4	PAVEMENT CONSTRUCTION AND MANAGEMENT	Honours Course
5	Air Quality Management	Honours Course
6	Microstructure and innovations in structural concrete	Honours Course
7	remedial class for s1 eee	Remedial Course
8	remedial class for s1 ec b	Remedial Course
9	CONSTRUCTION EQUIPMENTS AND METHODS	Honours Course
10	Environment and pollution	Honours Course
11	S8 CE honours	Honours Course

### Geo-Environmental Engineering

Type:	Honours Course
Details	CE465 Geo-Environmental Engineering
Mode of Instruction:	Flipped class
Staff(s) Associated	Grace Mary Abraham Dr. Mini Mathew
Course(s) Associated	CE465 - Geo-Environmental Engineering

### CE371 Environment and Pollution

Type:	Honours Course
Details	S7 HONOURS COURSE FOR 2017 -2021 BATCH
Mode of Instruction:	Discussion, Examination, Online Live Class, Self learning
Staff(s) Associated	FEBIN SAM PHILIP
Course(s) Associated	CE371 - Environment and Pollution

### Air Quality Management

Type:	Honours Course
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Details	CE 374
Mode of Instruction:	Blended learning
Staff(s) Associated	Soumya Anand Dr. Mini Mathew
Course(s) Associated	CE374 - Air Quality Management

## PAVEMENT CONSTRUCTION AND MANAGEMENT

Type:	Honours Course
Details	CET294PAVEMENT CONSTRUCTION AND MANAGEMENT
Mode of Instruction:	Flipped class
Staff(s) Associated	Deepak John Peter Dr. Mini Mathew
Course(s) Associated	CET294 - PAVEMENT CONSTRUCTION AND MANAGEMENT

## Air Quality Management

Type:	Honours Course
Details	CE374
Mode of Instruction:	Self learning
Staff(s) Associated	Dr. Mini Mathew
Course(s) Associated	CE374 - Air Quality Management

## Microstructure and innovations in structural concrete

Type:	Honours Course
Details	S8 honours
Mode of Instruction:	Self learning
Staff(s) Associated	Grace Mary Abraham Dr. Mini Mathew
Course(s) Associated	04CE6116 - Microstructure and Innovations in Structural Concrete

## remedial class for s1 eee

Type:	Remedial Course
Details	at hostel gorm 8.30 pm
Mode of Instruction:	Lecture

Staff(s) Associated	M V VARKEY
Course(s) Associated	EST100 - ENGINEERING MECHANICS

### remedial class for s1 ec b

Type:	Remedial Course
Details	class taken from 8.30 pm at hostel for an hour
Mode of Instruction:	Lecture
Staff(s) Associated	M V VARKEY
Course(s) Associated	EST100 - ENGINEERING MECHANICS

### CONSTRUCTION EQUIPMENTS AND METHODS

Type:	Honours Course
Details	CONSTRUCTION equipment AND METHODS
Mode of Instruction:	Discussion, Self learning
Staff(s) Associated	Vinay Mathews Dr. Mini Mathew
Course(s) Associated	04CE6416 - Construction Methods and Equipments

### Environment and pollution

Type:	Honours Course
Details	CE 371- Environment and pollution (Elective of B.Tech CE, fifth semester)
Mode of Instruction:	Discussion, Self learning
Staff(s) Associated	Dr. Mini Mathew
Course(s) Associated	CE371 - Environment and Pollution

### S8 CE honours

Type:	Honours Course
Details	M.Tech elective from CASE
Mode of Instruction:	
Staff(s) Associated	Grace Mary Abraham Jiss Abraham
Course(s) Associated	04CE7113 - Maintenance & Rehabilitation of Structures