A screenshot of a cell phone

Description generated with very high confidence

**Course Plan**

|  |  |
| --- | --- |
| **Department :** | Civil Engineering |
| **Course Name & code :** | Enter Mechanics of Solids & CIE 1051 |
| **Semester & branch :** | II & ALL BRANCHES |
| **Name of the faculty :** | DHANALAKSHMI & PRATHIBHA SHETTY |
| **No of contact hours/week:** | |  |  |  |  | | --- | --- | --- | --- | | **L** | **T** | **P** | **C** | | 2 | 1 | 0 | 3 | |

**Course Outcomes (COs)**

|  |  |  |  |
| --- | --- | --- | --- |
|  | ***At the end of this course, the student should be able to:*** | **No. of Contact Hours** | **Marks** |
| CO1: | Describe the resultant of coplanar system of forces and illustrate. | 5 | 14 |
| CO2: | Describe the equilibrium of coplanar system of forces and illustrate. | 7 | 20 |
| CO3: | Describe centroid and moment of inertia of plane figures and illustrate. | 8 | 22 |
| CO4: | Describe the stress and strains in deformable bodies and illustrate. | 11 | 31 |
| CO5: | Discuss thermal stresses and compound bars and illustrate. | 5 | 13 |
|  | **Total** | 36 | 100 |

**Assessment Plan**

|  |  |  |  |
| --- | --- | --- | --- |
| **Components** | **Assignments** | **Sessional Tests** | **End Semester/**  **Make-up Examination** |
| **Duration** | 20 to 30 minutes | 60 minutes | 180 minutes |
| **Weightage** | 20 % (4 X 5 marks) | 30 % (2 X 15 Marks) | 50 % (1 X 50 Marks) |
| **Typology of Questions** | Understanding/ Comprehension; Application; Analysis; Synthesis; Evaluation | Knowledge/ Recall; Understanding/ Comprehension; Application | Understanding/ Comprehension; Application; Analysis; Synthesis; Evaluation |
| **Pattern** | Answer one randomly selected question from the problem sheet (Students can refer their class notes) | MCQ: 10 questions (0.5 marks)  Short Answers: 5 questions (2 marks) | Answer all 5 full questions of 10 marks each. Each question may have 2 to 3 parts of 3/4/5/6/7 marks |
| **Schedule** | 4, 7, 10, and 13th week of academic calendar | Calendared activity | Calendared activity |
| **Topics Covered** | Quiz 1 (L 1-4& T 1) **(CO1)** | Test 1  (L 1-11& T 1-3)  **(CO1,2,3)** | Comprehensive examination covering full syllabus. Students are expected to answer all questions **(CO1-5)** |
| Quiz 2 (L **5-9**& T 2-3) **(CO2)** |
| Quiz 3 (L 10-16& T 4-7) **(CO3,4)** | Test 2  (L 12& T 4-10)  **(CO3,4)** |
| Quiz 4 (L 17-23& T 8-11) **(CO4,5)** |

**Lesson Plan**

|  |  |  |
| --- | --- | --- |
| **L. No./ T. No.** | **Topics** | **Course Outcome Addressed** |
| **L0** | Overview of the Course | CO |
| **L1** | Introduction to rigid body mechanics | 1 |
| **L2** | Resolution, composition, moment of force, couple | 1 |
| **L3** | Varignon’s theorem, Resolution of a force into a force and couple system | 1 |
| **L4** | Application Problems | 1 |
| **T1** | Application Problems | 1 |
| **L5** | Conditions of Equilibrium, Space and free body diagram, Lami’s theorem | 2 |
| **L6** | Application problems | 2 |
| **L7** | Types of supports, types of beams , types of loading | 2 |
| **T2** | Application problems | 2 |
| **L8** | Friction- Introduction | 2 |
| **L9** | Application Problems | 2 |
| **T3** | Application Problems | 2 |
| **L10** | CENTROID – Introduction, centroid of simple figures using first moment of area | 3 |
| **L11** | Centroid of simple figures using first moment of area | 3 |
| **L12** | Moment of inertia – Introduction, MI of simple figures | 3 |
| **L13** | MI of simple figures | 3 |
| **T4** | Application Problems | 3 |
| **T5** | Application Problems | 3 |
| **T6** | Application Problems | 3 |
| **T7** | Application Problems | 3 |
| **L14** | Mechanics of deformable bodies- Introduction | 4 |
| **L15** | Tension test on ductile and brittle material,Factor of safety,Allowable stress | 4 |
| **L16** | Application Problems | 4 |
| **L17** | Expression for deformation of a tapered bar, application problems | 4 |
| **L18** | Shear stress - Introduction | 4 |
| **L19** | Poissons ratio, Bulk modulus | 4 |
| **L20** | Relationship between E, G and K | 4 |
| **T8** | Application Problems | 4 |
| **T9** | Application Problems | 4 |
| **T10** | Application Problems | 4 |
| **L21** | Thin Cylinders- Introduction, application problems | 4 |
| **L22** | Compound bars, application problems | 5 |
| **L23** | Application Problems | 5 |
| **T11** | Application Problems | 5 |
| **L24** | Temperature stresses | 5 |
| **T12** | Application Problems | 5 |
| L25 | Shear Force and Bending Moment Diagrams- Introduction |  |
|  |  |  |
|  |  |  |
|  |  |  |

**References:**

|  |  |
| --- | --- |
| 1. | SINGER F.L. ENGINEERING MECHANICS, TATA MCGRAW HILL PUBLISHING (2007),. |
| 2. | BHAVIKATTI & RAJASEKHARAPPA, , ENGINEERING MECHANICS, NEW AGE INTERNATIONAL(2006). |
| 3. | BEER AND JOHNSTON, MECHANICS FOR ENGINEERS: STATICS, McGRAW-HILL SCIENCE ENGINEERING (2008) |
| 4. | PYTEL AND SINGER, STRENGTH OF MATERIALS, HARBOUR AND COLLINS(1987) |
| 5. | BHAVIKATTI S.S., , STRENGTH OF MATERIALS, VIKAS PUBLISHERS(2005). |
| 6. | BASAVARAJAIAH & MAHADEVAPPA, , STRENGTH OF MATERIALS IN SI UNITS, CBS PUBLISHERS (2010). |
| 7. | Click or tap here to enter text. |

|  |  |
| --- | --- |
| **Submitted by:** | PRATHIBHA SHETTY & DHANALAKSHMI |

**(Signature of the faculty)**

|  |  |
| --- | --- |
| **Date:** | 06-01-2020 |

|  |  |
| --- | --- |
| **Approved by:** | DR. PURUSHOTHAM G . SARVADE |

**(Signature of HOD)**

|  |  |
| --- | --- |
| **Date:** | 02-01-2020 |

**Faculty members teaching the course (IF MULTIPLE sections EXIST):**

|  |  |  |  |
| --- | --- | --- | --- |
| **FACULTY** | **Section** | **FACULTY** | **Section** |
| PROF. ARUN KUMAR Y. M. | M | PROF. PRASANNA KUMAR M | PM |
| PROF. RAVINDRANATHA | N | PROF. JAGADISHA H. M. | PR |
| PROF. CHAITHRA M. | O |  |  |
| PROF. PRATIBHA P. SHETTY | P |  |  |
| PROF. CHAITHRA M. | Q |  |  |
| PROF. DHANALAKSHMI | R |  |  |
| PROF. SUGANDHINI H. K. | S |  |  |
| PROF. V. SRINIVASA RAGHAVAN | T |  |  |
| PROF. PRASANNA KUMAR M | U |  |  |
| PROF. AVINASH A. R. | V |  |  |
| PROF. SANDEEP G. S. | W |  |  |
| DR. JAGADEESH PAI B. | X |  |  |