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Description generated with very high confidence

**Course Plan**

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| **Department :** | MATHEMATICS |
| **Course Name & code :** | ENGINEERING MATHEMATICS III & MAT 2155 |
| **Semester & branch :** | III SEMESTER & CSE/ICT/CC |
| **Name of the faculty :** | Enter name of the faculty. |
| **No of contact hours/week:** | |  |  |  |  | | --- | --- | --- | --- | | **L** | **T** | **P** | **C** | | 2 | 1 | 0 | 3 | |

**ASSESSMENT PLAN**

**Course Outcomes (COs)**

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|  | ***At the end of this course, the student should be able to:*** | **No. of Contact Hours** | **Marks** |
| CO1: | Understand concepts fo combinatorics and apply them. | 8 | 10 |
| CO2: | Understand concepts in Boolean Algebra and apply them to Boolean functions. | 8 | 10 |
| CO3: | Understand concepts of graph theory and their applications. | 8 | 10 |
| CO4: | Understand concepts of group theory and apply them. | 10 | 12 |
| CO5: | Understand concepts of propositional and predicate calculus. | 6 | 08 |
|  | **Total** |  |  |

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| **Components** | **Quizzes** | **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 1-9& T 1-3) **(CO1-2)** | Test 1  (L 1-16& T 1-5)  **(CO1-2)** | Comprehensive examination covering full syllabus. Students are expected to answer all questions **(CO1-5)** |
| Quiz 2 (L **10-18**& T 4-6) **(CO2-3)** |
| Quiz 3 (L 19-27& T 7-10) **(CO3-4)** | Test 2  (L 17-34& T 6-11)  **(CO3-4)** |
| Quiz 4 (L 28-36& T **y7-y8**) **(CO4-5)** |

**Course Plan**

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| **L. No./ T. No.** | **Topics** | **Course Outcome Addressed** |
| **L0** | Introduction to the course | CO1-CO5 |
| **L1** | Permutations and Combinations: With and without repetition, identical objects, examples | CO1 |
| **L2** | Distributions, Problems on permutations and combinations | CO1 |
| **L3** | Tutorial | CO1 |
| **L4** | Principle of Inclusion and Exclusion (statement only), problems, derangement | CO1 |
| **L5** | Partitions and Compositions, Ferrers Graph, Generating Functions | CO1 |
| **L6** | Tutorial | CO1 |
| **L7** | Ordering of permutations – Lexicographical and reverse Lexicographical, Fike’s ordering of permutations | CO1 |
| **L8** | Relations on a set and types of relations | CO2 |
| **L9** | Tutorial | CO2 |
| **L 10** | Partial Ordering Relations and Posets, Chains and anti-Chains | CO2 |
| **L 11** | Bounds, Lattices and examples | CO2 |
| **L12** | Tutorial | CO2 |
| **L 13** | Basic properties of algebraic systems defined by lattices | CO2 |
| **L 14** | Distributive Lattices and Complemented Lattices | CO2 |
| **L 15** | Tutorial | CO2 |
| **L 16** | Boolean Lattices and Boolean Algebra | CO2 |
| **L 17** | Graphs – Basic definitions, Basic properties and problems, Isomorphism and self-complementary graphs, problems | CO3 |
| **L 18** | Tutorial | CO3 |
| **L 19** | Connectedness of a graph, Eulerian and Hamiltonian graphs, Center, radius, diameter of a graph | CO3 |
| **L 20** | Trees and Properties | CO3 |
| **L 21** | Tutorial | CO3 |
| **L 22** | Matrices related to graphs | CO3 |
| **L 23** | Dijkstra’s algorithm for finding the shortest path | CO3 |
| **L 24** | Tutorial | CO3 |
| **L 25** | Semi-groups, Monoids and Groups – Definitions and examples | CO4 |
| **L 26** | Elementary properties of groups and problems | CO4 |
| **L 27** | Tutorial | CO4 |
| **L 28** | Subgroups and related problems | CO4 |
| **L 29** | Cosets of a group and related problems | CO4 |
| **L 30** | Tutorial | CO4 |
| **L 31** | Lagrange’s Theorem and related problems, Cyclic groups and proerties | CO4 |
| **L 32** | Normal subgroups and properties | CO4 |
| **L 33** | Tutorial | CO4 |
| **L 34** | Codes and Group codes | CO4 |
| **L 35** | Propositional calculus – Basic definitions, Connectives Well-formed formulas and tautologies | CO5 |
| **L 36** | Tutorial | CO5 |
| L 37 | Equivalence formulas and tautological implications, inference theory of propositional calculus | CO5 |
| L 38 | Predicate calculus – Basic denfifitions, quantifications | CO5 |
| L 39 | Tutorial | CO5 |
| L 40 | Inference theory of Predicated calculus | CO5 |

**References:**

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| 1. | C.L.Liu, Elements of Discrete Mathematics, Mc Graw Hill, 1986 |
| 2. | J.P.Trembaly and R. Manohar, Discrete Mathematics Structures with application to computer science, Mc Graw Hill, 1987. |
| 3. | E.S.Page and L.B.Wilson, An introduction to computational combinations, Cambridge Uni. Press. 1979 |
| 4. | Narasingh Deo, Graph theory with Application to computer science, PHI, 1987. |
| 5. | F. Harary, Graph Theory, Arosa Publishing House, New Delhi, second edition, 1990 |
| 6. | Alan Tucker, Applied Combinatorics, John Wiley and sons, Inc. 1996. |
| 7. | Click or tap here to enter text. |

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| **Submitted by:** | Mrs. Kavitha Koppula |

**(Signature of the faculty)**

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| **Date:** | 19-07-2019 |

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| **Approved by:** | Dr. Sudhakara G |

**(Signature of HOD)**

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| **Date:** | 19-07-2019 |

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

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| **FACULTY** | **Section** | **FACULTY** | **Section** |
| VM | CSE(A) | KAB | CC(A) |
| SNU | CSE(B) | SHK | CC(B) |
| DS | CSE(C) | VM | ICT(A) |
| ABB | CSE(D) | KK | ICT(B) |
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