IISER Pune - Course Content

Semester	JAN 2024
Open to Semester	4
Course Code	MT2233
Course title	Discrete Structures (E)
Nature of Course	LE - Lecture
Credit	3
Coordinator and participating faculty (if any)	**Dr. Krishna Kaipa**
Pre-requisites	NA
Objectives	The purpose of this course is to understand discrete structures that are used not only in the traditional areas of mathematical application but also in computer science, information theory, biological sciences, physical sciences, etc. In particular, this course is meant to introduce sets, relations, functions, counting, and combinatorics, and graph theory.
Course content	Set, functions, relations, partial ordered sets, chains and antichains in posets, Counting and Combinatorics: Permutations and combinations of multisets, Binomial identites, Set partitions, Bell, Catalan, and Stirling numbers, The Pigeonhole Principle (strong form), The Inclusion and Exclusion Method and applications, Mobius Inversion, Recurrence Relations and Generating Functions. Graph Theory: Paths and Cycles, Eulerian and Hamiltonian Graphs, Bipartite graphs and Matching, Trees, Cayley*s tree formula.
Evaluation / Assessment	End Sem: 40% Mid sem: 40% best 2 of 3 quizzes: 20%
Suggested readings	1. Introductory Combinatorics: R. Brualdi (2009) Prentice Hall. 2. Combinatorics: P. Cameron (1994) Cambridge. 3. Enumerative Combinatorics: R. Stanley (2012) Cambridge. 4. A Course in Combinatorics: J. H. van Lint, R. M. Wilson (2001) Cambridge.

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When Next	offered every year in January semester
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