

INDIAN INSTITUTE OF TECHNOLOGY TIRUPATI
PROFORMA FOR NEW COURSE

1.	Title of the Course	Discrete Mathematics for Computer Science
2.	Course Number	CS2103
3.	Status of the Course	Core
4.	Structure of Credits	3-0-0-3
5.	Offered To	UG
6.	New Course/Modification to	New
7.	To be Offered by	Department of Computer Science and Engineering
8.	To take effect from	July 2018
9.	Prerequisite	Nil
10.	Whether approved by the Department	Yes
11.	Course Objective: To learn formal representation and reasoning methodologies for fundamental discrete structures in computer science.	
12.	Course Content: Finite sets, power set, cartesian product, properties of sets, sequences; Infinite sets, well-ordering, countable and uncountable sets, Cantor's diagonalization; Introduction to logic, propositional logic, truth tables, deduction, resolution, predicates and quantifiers, mathematical proofs, mathematical induction; Basic counting techniques, principle of inclusion-exclusion, pigeon hole principle, recurrence relations, generating functions; Relations, equivalence relations, functions, bijections, binary relations, partial orders, lattices, Hasse diagrams; Graphs, trees, connectivity, paths, cycles, Eulerian walks, Hamiltonian cycles, colourings, planarity, matching; Number theory and cryptography, divisibility and modular arithmetic, prime factorization, primality testing, gcd, Rivest–Shamir–Adleman(RSA) cryptosystem.	
13.	Text book(s): 1. Rosen K H, <i>Discrete Mathematics and its Applications</i> , 7th Edition, Tata McGraw Hill (2015).	
14.	Reference(s): 1. Liu C L and Mohapatra D P, <i>Elements Of Discrete Mathematics: A Computer Oriented Approach</i> , 4th Edition, McGraw Hill (2014).	