

**BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE, PILANI, HYDERABAD CAMPUS**  
**SECOND SEMESTER 2012-2013, INSTRUCTION DIVISION**  
**COURSE HANDOUT (PART-II)**

**Date: 12/1/2014**

In addition to Part I (General Handout for all courses appended to the timetable) this portion gives further specific details regarding the course.

**Course No.** : CS F364  
**Course Title** : Design and Analysis of Algorithms  
**Instructor-in-charge** : Tathagata Ray  
**Instructor** :

### 1. Scope and Objective

The objective of the course is to introduce students to different paradigm of algorithms and various techniques to analyze them. The analysis is of the correctness of the algorithm and the time complexity (also space complexity). They will also learn about the computational intractability; a class of NP-complete problems and techniques to prove NP-completeness. They will learn major techniques to deal with such computationally intractable set of problems.

### 2. Text Books:

(T1) To be announced

### 3. Reference Books:

(R1) To be announced

### 4. Lecture Plan:

Lecture No.	Learning Objectives	References
01-10	<b>Basic Design Techniques:</b> <i>Divide and conquer, Greedy, Dynamic Programming.</i>	TBA
11-18	<b>Specialized design techniques :</b> <i>Network flow, Randomization (Examples, Analysis, Limitation)</i>	TBA
19-23	<b>Complexity Classes and Hardness of problems:</b> <i>P, NP, Reductions, NP hardness and NP Completeness, reduction techniques, Some standard NP complete problems</i>	TBA
24-29	<b>Design techniques for Hard Problems:</b> <i>Backtracking, branch and Bound, Approximation algorithms</i>	TBA
30-35	<b>Linear Programming:</b> <i>LP Problems and Simplex algorithms.</i>	TBA
36-38	<i>Introduction to design and analysis of parallel and multithreaded programming</i>	TBA

**5. Evaluation Scheme:**

<b>S. No.</b>	<b>Evaluation Component</b>	<b>Duration</b>	<b>Date and Time</b>	<b>Weightage (%)</b>	<b>Nature of Component</b>
1.	Test I	60 minutes	21/2/14	20	Closed Book
2.	Test II	60 minutes	01/04/14	20	Closed Book
3	Assignments/Practical			20	Open Book
5.	Comprehensive	3 Hours	05/05/14 AN	40	Closed Book/Open Book

**6. Make-Up Policy:**

Makeup for tests can be given only for genuine cases and that too with prior approval from the instructor in charge.

**7. Notices:** All notices pertaining to this course will be displayed on the CS & IS Notice Board or CMS.

**8. Chamber Consultation Hour:** Every Friday after the class (10:00 – 11:00 a.m).

**Instructor-in-charge**