

## Ideas to be Adopted from IUCEE Workshop on Teaching Algorithms

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## Outline

- Pedagogical Ideas
- Technical Ideas
  - Discrete Mathematics
  - Data Structures
  - Algorithms
- Research Motivation

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## Pedagogical Ideas

- “Students learn by thinking not by listening”
- Create long term impact on students
- Active Learning through
  - Informational Lecture
  - Student Participation
  - Student-Student Interaction through Class Room Activities
  - Associating theory with real world examples
  - Sufficient Delivery of Technical Concept
    - What to stress & what not to stress
- Clearly Stated Objectives

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## Discrete Structures

- Apt faculty to take the course (Maths or CS) – resolved
- Correlating more with Computer Science
- Proof Techniques
  - Tiling Problems
- Baye’s Theorem

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## Data Structures

- More Emphasis on Practically used data structures like Priority Queues & Hash Tables
- Identify relevant Data Structures
- Communicate implementation details.

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## Algorithms

- “All of computer science is Study of Algorithms”
- Starting the course with Stable Marriage Problem.
- Key Ideas in Problem Mapping.
- TSP.
- Complexity Classes – P, NP, NPC, NPH, PSPACE & Co-NP.

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## Research Motivation

- Research Areas
  - TSP
  - Use of Network flow in Image Segmentation
  - Error Detecting Codes, etc.
- Taking Technology to Society
- Research in Education Technology
- Exposing the Research Status