The mission of the Department of Industrial and Information Management is to Cultivate quality professionals with enthusiasm and global perspectives.

General Program Learning Goals (goals covered by this course are indicated):

1. Graduates should be able to communicate effectively verbally and in writing.
2. Graduates should solve strategic problems with a creative and innovative approach.
3. Graduates should demonstrate leadership skills demanded of a person in authority.
4. Graduates should possess a global economic and management perspective.
5. Graduates should possess the necessary skills and values demanded of a true professional.

Instructor:
Shine-Der Lee
Phone: ext. # 53146
Email: sdlee@mail.ncku.edu.tw
Class hours: Tentative, (Monday 2:10-4:00PM, Wednesday 3:10-4:00PM)
Office hours: To be announced, (Monday 4:00-5:30PM, Wednesday 4:00-5:30PM, or by appointment)

Course Description:
This is an introductory course of algorithmic design and analysis at the graduate level. The purposes are to introduce students with formal notions of algorithms, and to illustrate, explore the rich diversity of computational models to appropriate problems for potential applications. This is a lecture-based course that emphasizes on the use of scientific and proven computational models for solving related MS/OR problems. Various applications are discussed throughout this course.

Course Objectives:
The objective of this course is to provide students with formal concepts and underlying theories for the design and analysis of algorithms. The primary goals of this course are:
- To demonstrate the interplay of algorithmic design and analysis process, including problem formulation, computational model building, solution procedures, analysis, and implementation.
- To introduce various algorithmic design and analysis techniques for solving a variety of industrial engineering and management science problems.
- To establish a solid foundation for advanced study in computational models, algorithmic design and analysis, and complexity study.
Content Summary:

Topics included but are not limited to:

- Administration and introduction (1 week)
- Data Structure (2 weeks)
- Sorting (2 weeks)
- Graph (2 weeks)
- Backtracking, Branch and Bound (1 week)
- Greedy Algorithms (2 weeks)
- Divide and Conquer (1 week)
- Dynamic Programming (1 week)
- Heuristics (2 weeks)
- Introduction of Probabilistic Algorithms (2 weeks)
- Computational Complexity (2 weeks)

Prerequisite:

- Linear algebra, Basic knowledge of programming language. Consult with instructor for special cases.

Textbooks:


Recommended references:


Course Requirement:
• Class rules will be strictly enforced, turn off your pagers, cellular phones, and electronic devices.
• Homework will be assigned every week. This is a keystone for learning algorithms by doing. Students are encouraged to discuss with others for the modeling process involved, while independent work of each student is expected, in order to achieve the stated learning goals. Each assignment is due in the first meeting of the coming week. Submit your homework with letter or A4 size papers. No late or sloppy homework will be accepted.
• A special problem (A scaled-up version of assignment) is given to each student during the last quarter of the semester. This is designed for the students to independently practice the algorithmic design and analysis process learned in the class. A complete written report with oral discussion is due in the final week.
• No make-up Exam

Grading Policy:
• Homework 30%
• Mid-term Exam 30%
• Final Exam 30%
• Special problem (project) 10%
• Q&A, performance improvement +5%

Grading Policy/評量方式:

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