# Tamkang University Academic Year 110, 2nd Semester Course Syllabus

| Course Title | ALGORITHMS | Instructor | FU-YI HUNG |
|---|---|---|---|
| Course Class | TEIDB2A<br>DEPARTMENT OF COMPUTER SCIENCE AND INFORMATION ENGINEERING (ENGLISH-TAUGHT PROGRAM), 2A | Details | ◆ General Course<br>◆ Required<br>◆ One Semester |
| Relevance to SDGs | SDG4 Quality education | | |

### Departmental Aim of Education

Ⅰ. Comprehend professional knowledge.

Ⅱ. Acquire mastery of Practical Skills.

Ⅲ. Establish creative achievement.

### Subject Departmental core competences

A. Programming and application ability.(ratio:100.00)

### Subject Schoolwide essential virtues

2. Information literacy. (ratio:100.00)

| Course Introduction | This course provides an introduction to the design and analysis of algorithms. Course topics include: Fundamentals of the Analysis of Algorithm Efficiency, Divide-and-Conquer, Decrease-and-Conquer, Transform-and-Conquer, Space and Time Tradeoffs, Dynamic Programming, Greedy Technique, Iterative Improvement. |
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**The correspondences between the course's instructional objectives and the cognitive, affective, and psychomotor objectives.**

Differentiate the various objective methods among the cognitive, affective and psychomotor domains of the course's instructional objectives.

Ⅰ. Cognitive : Emphasis upon the study of various kinds of knowledge in the cognition of the course's veracity, conception, procedures, outcomes, etc.

Ⅱ.Affective : Emphasis upon the study of various kinds of knowledge in the course's appeal, morals, attitude, conviction, values, etc.

Ⅲ.Psychomotor: Emphasis upon the study of the course's physical activity and technical manipulation.

| No. | Teaching Objectives | objective methods |
|---|---|---|
| 1 | To understand the fundamental properties of algorithms | Cognitive |
| 2 | To implement algorithms to solve practical problems by software design | Cognitive |
| 3 | To analyze the efficiency of algorithms | Cognitive |

The correspondences of teaching objectives : core competences, essential virtues, teaching methods, and assessment

| No. | Core Competences | Essential Virtues | Teaching Methods | Assessment |
|---|---|---|---|---|
| 1 | A | 2 | Lecture | Testing |
| 2 | A | 2 | Lecture | Testing |
| 3 | A | 2 | Lecture | Testing |

## Course Schedule

| Week | Date | Course Contents | Note |
|---|---|---|---|
| 1 | 111/02/21 ~ 111/02/25 | Introduction | |
| 2 | 111/02/28 ~ 111/03/04 | Fundamentals of the Analysis of Algorithm Efficiency | |
| 3 | 111/03/07 ~ 111/03/11 | Fundamentals of the Analysis of Algorithm Efficiency | |
| 4 | 111/03/14 ~ 111/03/18 | Fundamentals of the Analysis of Algorithm Efficiency | |
| 5 | 111/03/21 ~ 111/03/25 | Brute Force | |
| 6 | 111/03/28 ~ 111/04/01 | Brute Force | |
| 7 | 111/04/04 ~ 111/04/08 | Divide-and-Conquer | |
| 8 | 111/04/11 ~ 111/04/15 | Divide-and-Conquer | |
| 9 | 111/04/18 ~ 111/04/22 | Divide-and-Conquer | |

| 10 | 111/04/25 ~ 111/04/29 | Midterm Exam Week | |
|---|---|---|---|
| 11 | 111/05/02 ~ 111/05/06 | Decrease-and-Conquer | |
| 12 | 111/05/09 ~ 111/05/13 | Transform-and-Conquer | |
| 13 | 111/05/16 ~ 111/05/20 | Transform-and-Conquer | |
| 14 | 111/05/23 ~ 111/05/27 | Dynamic Programming | |
| 15 | 111/05/30 ~ 111/06/03 | Dynamic Programming | |
| 16 | 111/06/06 ~ 111/06/10 | Greedy Technique | |
| 17 | 111/06/13 ~ 111/06/17 | Greedy Technique | |
| 18 | 111/06/20 ~ 111/06/24 | Final Exam Week | |

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| Requirement | Cheating or plagiarism will result in a failing grade in the course.<br>作弊或抄襲者學期成績為零分，並且依照校規懲處。 |
| Teaching Facility | Computer, Projector |
| Textbooks and Teaching Materials | Introduction to the Design and Analysis of Algorithms, by Anany V. Levitin, Pearson Education Inc., 2nd Edition, 2007 |
| References | Introduction to Algorithms, by T. H. Cormen, C. E. Leiserson, R. L. Rivest and C. Stein , McGraw-Hill, 3rd edition, 2009 |
| Number of Assignment(s) | **6** (Filled in by assignment instructor only) |
| Grading Policy | ◆ Attendance： 5.0 % ◆ Mark of Usual：40.0 % ◆ Midterm Exam： 27.0 %<br>◆ Final Exam： 28.0 %<br>◆ Other〈 〉： % |
| Note | This syllabus may be uploaded at the website of Course Syllabus Management System at http://info.ais.tku.edu.tw/csp or through the link of Course Syllabus Upload posted on the home page of TKU Office of Academic Affairs at http://www.acad.tku.edu.tw/CS/main.php .<br>**※ Unauthorized photocopying is illegal. Using original textbooks is advised. It is a crime to improperly photocopy others' publications.** |