# Tamkang University Academic Year 112, 1st Semester Course Syllabus

| Course Title | RESEARCH METHODOLOGY | Instructor | HSIA-HSIANG CHEN |
|---|---|---|---|
| Course Class | TEIBM1A<br>MASTER'S PROGRAM, DEPARTMENT OF COMPUTER SCIENCE AND INFORMATION ENGINEERING (ENGLISH-TAUGHT PROGRAM), 1A | Details | ◆ General Course<br>◆ Required<br>◆ 1st Semester |
| Relevance to SDGs | SDG4  Quality education<br><br>SDG8  Decent work and economic growth<br><br>SDG9  Industry, Innovation, and Infrastructure | | |

## Departmental Aim of Education

Ⅰ. Cultivate the ability to conduct independent research and problem solving.

Ⅱ. Strengthen creativity and research capacity.

Ⅲ. Build profound professional knowledge in computer science and information engineering.

Ⅳ. Engage in self-directed lifelong learning.

## Subject Departmental core competences

A. Independent problem solving ability.(ratio:20.00)

B. Independent innovative thinking ability.(ratio:20.00)

C. Research paper writing and presentation ability.(ratio:10.00)

D. Research & development (R&D) ability in information engineering.(ratio:20.00)

E. Project execution and control ability.(ratio:10.00)

F. Lifelong self-directed learning ability.(ratio:20.00)

## Subject Schoolwide essential virtues

1. A global perspective. (ratio:20.00)

2. Information literacy. (ratio:20.00)

3. A vision for the future. (ratio:10.00)

4. Moral integrity. (ratio:10.00)

5. Independent thinking. (ratio:10.00)

6. A cheerful attitude and healthy lifestyle. (ratio:10.00)

7. A spirit of teamwork and dedication. (ratio:10.00)

8. A sense of aesthetic appreciation. (ratio:10.00)

| | |
|---|---|
| Course Introduction | In the course, we will introduce and explore the research method in the computer science field. The course covers the procedure of research, which is for problem definition, theoretical formulation, methodology, experimental design, statistical analysis, and measurement index. Moreover, there will be relevant aspects of reading, writing, evaluating literature, and researching publications in the lectures. |

**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 | The course aims to teach students to understand how to survey topics, build research models, carry out experiment problems, and present results during the semester. | Cognitive |

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

| No. | Core Competences | Essential Virtues | Teaching Methods | Assessment |
|---|---|---|---|---|
| 1 | ABCDEF | 12345678 | Lecture, Discussion | Study Assignments, Discussion(including classroom and online), Report(including oral and written) |

## Course Schedule

| Week | Date | Course Contents | Note |
|---|---|---|---|
| 1 | 112/09/11~ 112/09/17 | Course introduction | |
| 2 | 112/09/18~ 112/09/24 | Digital library for research | |
| 3 | 112/09/25~ 112/10/01 | Digital library for research | |
| 4 | 112/10/02~ 112/10/08 | Formulation, theory and model | |

| 5 | 112/10/09~<br>112/10/15 | Formulation, theory and model | |
|---|---|---|---|
| 6 | 112/10/16~<br>112/10/22 | Student presentation | |
| 7 | 112/10/23~<br>112/10/29 | Student presentation | |
| 8 | 112/10/30~<br>112/11/05 | Experiment design and performance evaluation | |
| 9 | 112/11/06~<br>112/11/12 | Experiment design and performance evaluation | |
| 10 | 112/11/13~<br>112/11/19 | Midterm exam | |
| 11 | 112/11/20~<br>112/11/26 | Student presentation | |
| 12 | 112/11/27~<br>112/12/03 | Student presentation | |
| 13 | 112/12/04~<br>112/12/10 | Qualitative research and quantitative research | |
| 14 | 112/12/11~<br>112/12/17 | Qualitative research and quantitative research | |
| 15 | 112/12/18~<br>112/12/24 | Writing an abstract for a specific research topic | |
| 16 | 112/12/25~<br>112/12/31 | Student presentation | |
| 17 | 113/01/01~<br>113/01/07 | Student presentation | |
| 18 | 113/01/08~<br>113/01/14 | Final exam | |

| Key capabilities | self-directed learning<br>Information Technology<br>Problem solving<br>Interdisciplinary |
|---|---|
| Interdisciplinary | STEAM course (S:Science, T:Technology, E:Engineering, M:Math, A field:Integration of Art and Humanist) |
| Distinctive teaching | Methodology course |
| Course Content | Computer programming or Computer language (students have hands-on experience in related projects)<br>Logical Thinking<br>AI application |
| Requirement | Students should prepare their laptops or mobiles in the classroom. |
| | |

| Textbooks and Teaching Materials | Self-made teaching materials:Presentations, Handouts |
|---|---|
| References | Teaching materials are from academic articles and books. |
| Grading Policy | ◆ Attendance： 20.0 % ◆ Mark of Usual：20.0 % ◆ Midterm Exam： %<br><br>◆ Final Exam： %<br><br>◆ Other〈presentation/report〉：60.0 % |
| 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><br>※ **Unauthorized photocopying is illegal. Using original textbooks is advised. It is a crime to improperly photocopy others' publications.** |