Tamkang University Academic Year 112, 2nd Semester Course Syllabus

Course Title	DEEP LEARNING	Instructor	WU, SHIH-JUNG
Course Class	TEIBM1A MASTER'S PROGRAM, DEPARTMENT OF COMPUTER SCIENCE AND INFORMATION ENGINEERING (ENGLISH-TAUGHT PROGRAM),	Details	◆ General Course ◆ Required ◆ One Semester

Relevance to SDGs	1A
	  SDG4 Quality education
	
	  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:20.00)

F. Lifelong self-directed learning ability.(ratio:10.00)

Subject Schoolwide essential virtues

1. A global perspective. (ratio:10.00)

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:20.00)

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

Course Introduction	Deep learning is rooted in neural network-like models. At present, speech recognition and image recognition systems are completed by deep learning technology. This course will provide an introduction to traditional machine learning, neural-like networks, and the development and trend of theoretical foundations and applications of deep learning.

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	It enables students to have a complete theoretical foundation of deep learning, including: traditional commonly used neural network-like architectures and deep learning techniques. And train students to use the Python programming language, Tensorflow/Pytorch deep learning network architecture and related library to build practical capabilities.	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	Report(including oral and written)

Course Schedule			
Week	Date	Course Contents	Note
1	113/02/19 ~ 113/02/25	Introduction to deep learning	
2	113/02/26 ~ 113/03/03	Introduction to deep learning	
3	113/03/04 ~ 113/03/10	MLP.	

4	113/03/11 ~ 113/03/17	MLP.	
5	113/03/18 ~ 113/03/24	MLP.	
6	113/03/25 ~ 113/03/31	CNN.	
7	113/04/01 ~ 113/04/07	CNN.	
8	113/04/08 ~ 113/04/14	CNN.	
9	113/04/15 ~ 113/04/21	RNN/LSTM.	
10	113/04/22 ~ 113/04/28	RNN/LSTM.	
11	113/04/29 ~ 113/05/05	RNN/LSTM.	
12	113/05/06 ~ 113/05/12	Data preprocessing.	
13	113/05/13 ~ 113/05/19	Data preprocessing.	
14	113/05/20 ~ 113/05/26	Tune your deep learning model.	
15	113/05/27 ~ 113/06/02	Tune your deep learning model.	
16	113/06/03 ~ 113/06/09	Tune your deep learning model.	
17	113/06/10 ~ 113/06/16	Transfer learning.	
18	113/06/17 ~ 113/06/23	Transfer learning.	

Key capabilities	Information Technology Problem solving
Interdisciplinary	
Distinctive teaching	
Course Content	Computer programming or Computer language (students have hands-on experience in related projects) Logical Thinking AI application

Requirement	
Textbooks and Teaching Materials	Self-made teaching materials:Presentations, Handouts
References	Deep learning related.
Grading Policy	◆ Attendance： 40.0 % ◆ Mark of Usual： % ◆ Midterm Exam： % ◆ Final Exam： % ◆ Other〈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 . ※ **Unauthorized photocopying is illegal. Using original textbooks is advised. It is a crime to improperly photocopy others' publications.**