Tamkang University Academic Year 113, 2nd Semester Course Syllabus

Course Title	NATURAL LANGUAGE PROCESSING	Instructor	YU, KUO-CHUNG
Course Class	TKFXB3A DEPARTMENT OF ARTIFICIAL INTELLIGENCE, 3A	Details	◆ General Course ◆ Required ◆ One Semester ◆ 3 Credits
Relevance to SDGs	SDG4 Quality education		

Departmental Aim of Education

Ⅰ. Students may analyze problems in applied science based on the fundamental knowledge of programming, mathematics, and artificial intelligence.

Ⅱ. Students may plan and implement an AI system following the procedures of problem analysis, experiment testing, data visualizing, derivation and deduction.

Ⅲ. Educate the students to be AI engineers who may accomplish their missions indepedently and may collaborate with their colleagues in the workplace.

Ⅳ. Students may have basic skills and global competence for career diversification, and may keep lifelong learning.

Subject Departmental core competences

A. Professional analysis.(ratio:40.00)

B. Practical application.(ratio:35.00)

C. Professional attitude.(ratio:10.00)

D. Global Mobility.(ratio:15.00)

Subject Schoolwide essential virtues

1. A global perspective. (ratio:10.00)
2. Information literacy. (ratio:30.00)
3. A vision for the future. (ratio:10.00)
4. Moral integrity. (ratio:10.00)
5. Independent thinking. (ratio:15.00)
6. A cheerful attitude and healthy lifestyle. (ratio:5.00)
7. A spirit of teamwork and dedication. (ratio:15.00)
8. A sense of aesthetic appreciation. (ratio:5.00)

Course Introduction	Natural Language Processing (NLP) is a crucial branch of artificial intelligence. The course content encompasses the fundamental concepts, techniques, and methods of natural language processing. Students will learn how to integrate NLP with other AI technologies, such as deep learning and reinforcement learning, to solve more complex problems. 150 minutes of this course are designated for instruction, while the professor will use the extra time flexibly depending on the situation

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	Students can understand the fundamental concept of NLP	Cognitive
2	Students can apply tools to solve NLP tasks	Affective
3	Students can apply NLP tools and concepts	Psychomotor

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

No.	Core Competences	Essential Virtues	Teaching Methods	Assessment
1	A	2378	Lecture, Discussion	Testing, Study Assignments
2	BD	1456	Experience	Practicum
3	ABC	12345678	Lecture	Testing, Practicum

Course Schedule

Week	Date	Course Contents	Note
1	114/02/17 ~ 114/02/23	Introduction to NLP	
2	114/02/24 ~ 114/03/02	Basic Text Processing	
3	114/03/03 ~ 114/03/09	Linguistics basics	

4	114/03/10 ~ 114/03/16	Feature Engineering	
5	114/03/17 ~ 114/03/23	Deep Learning and NLP	
6	114/03/24 ~ 114/03/30	Text Classification	
7	114/03/31 ~ 114/04/06	Sentiment Analysis	
8	114/04/07 ~ 114/04/13	Text Generation	
9	114/04/14 ~ 114/04/20	Midterm Exam/Midterm Assessment Week (teachers can adjust the week as needed)	
10	114/04/21 ~ 114/04/27	Seq2Seq Models and Applications	
11	114/04/28 ~ 114/05/04	Machine Translation	
12	114/05/05 ~ 114/05/11	Question Answering Systems	
13	114/05/12 ~ 114/05/18	Dialog Systems	
14	114/05/19 ~ 114/05/25	NLP Application development	
15	114/05/26 ~ 114/06/01	Speech Recognition and Processing	
16	114/06/02 ~ 114/06/08	Advanced Topics	
17	114/06/09 ~ 114/06/15	Final Exam/Final Assessment Week (teachers can adjust the week as needed)	
18	114/06/16 ~ 114/06/22	Discussion in MS Teams	

Key capabilities	Information Technology
Interdisciplinary	STEAM course (S:Science, T:Technology, E:Engineering, M:Math, A field:Integration of Art and Humanist)
Distinctive teaching	Project implementation course
Course Content	AI application

Requirement	
Textbooks and Teaching Materials	Self-made teaching materials:Presentations, Handouts
References	None
Grading Policy	◆ Attendance： 5.0 % ◆ Mark of Usual：25.0 % ◆ Midterm Exam： 25.0 % ◆ Final Exam： 25.0 % ◆ Other〈Practicum Course〉：20.0 %
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.**