Tamkang University Academic Year 114, 1st Semester Course Syllabus

Course Title	ARTIFICIAL INTELLIGENCE PRACTICE	Instructor	PO-HSIANG CHEN
Course Class	TETEB4A DIVISION OF ELECTRICAL AND COMMUNICATION ENGINEERING, DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING, 4A	Details	◆ General Course ◆ Selective ◆ One Semester ◆ 2 Credits
Relevance to SDGs	SDG4 Quality education SDG9 Industry, Innovation, and Infrastructure		

Departmental Aim of Education

Ⅰ. Educate students to have knowledge in mathematics, science and engineering to solve electrical engineering related problems.

Ⅱ. Educate the student as a team work electrical engineer to be independently complete the assigned tasks.

Ⅲ. Educate students to realize the trend variations of electrical engineering industry and copy with the challenges of modern diversified professor careers.

Subject Departmental core competences

A. Have the ability to apply mathematical tools along with scientific methods to solve electrical engineering related problems.(ratio:10.00)

B. Have the ability to design and execute electrical engineering experiments, analyze and interpret data.(ratio:10.00)

C. Have the necessary knowledge, skills and the ability to operate modern tools to execute the practical electrical engineering issues.(ratio:15.00)

D. Have the ability to design electrical engineering systems, components, or manufacturing processes.(ratio:15.00)

E. Have the abilities to manage electrical engineering projects, to skillfully communicate, to integrate various fields and cooperate team members.(ratio:15.00)

F. Have the ability to discover, analyze, apply research results and cope with the issues resulting from the integration of electrical engineering complex problems.(ratio:10.00)

G. Have the ability to realize the world affairs, to understand how engineering technology effects on the environment, society and the globe and to acknowledge the lifelong learning.(ratio:15.00)

H. Have the ability to understand and apply professional ethics, and have correct awareness on the social responsibility and the intellectual property, and respect diversified perspectives.(ratio:10.00)

Subject Schoolwide essential virtues
1. A global perspective. (ratio:15.00) 2. Information literacy. (ratio:10.00) 3. A vision for the future. (ratio:15.00) 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:15.00) 8. A sense of aesthetic appreciation. (ratio:15.00)

Course Introduction	This course will introduces and utilizes models, techniques, and tools related to artificial intelligence and deep learning. The goal is to allow students to gain a deeper understanding of the operation of artificial intelligence models and the construction of applications through hands-on practice.

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 will have a basic concept of machine learning and deep learning.	Cognitive
2	Students will learn how to use related models and tools of AI applications.	Psychomotor
3	Students will be able to design and develop an application of AI.	Psychomotor

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

No.	Core Competences	Essential Virtues	Teaching Methods	Assessment
1	ABCDEFGH	12345678	Lecture, Discussion, Practicum	Study Assignments, Discussion(including classroom and online), Report(including oral and written)
2	ABCDEFGH	12345678	Lecture, Discussion	Study Assignments, Discussion(including classroom and online), Report(including oral and written)
3	ABCDEFGH	12345678	Lecture, Discussion	Study Assignments, Discussion(including classroom and online), Report(including oral and written)

Course Schedule

Week	Date	Course Contents	Note
1	114/09/15 ~ 114/09/21	Overview of Artificial Intelligence and workflow automation	
2	114/09/22 ~ 114/09/28	N8N architecture and installation	
3	114/09/29 ~ 114/10/05	Basic n8n nodes	
4	114/10/06 ~ 114/10/12	Fundamentals of AI models	
5	114/10/13 ~ 114/10/19	Connecting n8n with AI nodes	
6	114/10/20 ~ 114/10/26	AI output verification	
7	114/10/27 ~ 114/11/02	RAG workflow fundamentals	
8	114/11/03 ~ 114/11/09	Multi-step workflow control	
9	114/11/10 ~ 114/11/16	Midterm Exam	
10	114/11/17 ~ 114/11/23	Advanced API integration	
11	114/11/24 ~ 114/11/30	Multi-agent architecture concepts	
12	114/12/01 ~ 114/12/07	Workflow optimization	
13	114/12/08 ~ 114/12/14	Risks and ethics	
14	114/12/15 ~ 114/12/21	Final project (I)	

15	114/12/22～ 114/12/28	Final project (II)	
16	114/12/29～ 115/01/04	Final project presentation	
17	115/01/05～ 115/01/11	Final Week of Diverse Assessments	
18	115/01/12～ 115/01/18	Flexible Teaching Week for Teachers	

Key capabilities	Information Technology
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
References	
Grading Policy	◆ Attendance： 20.0 % ◆ Mark of Usual：20.0 % ◆ Midterm Exam： 20.0 % ◆ Final Exam： 40.0 % ◆ Other〈 〉： %
Note	This syllabus may be uploaded at the website of Course Syllabus Management System at https://web2.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. ※"Adhere to the concept of intellectual property rights" and "Do not illegally photocopy, download, or distribute." Using original textbooks is advised. It is a crime to improperly photocopy others' publications.