Tamkang University Academic Year 111, 1st Semester Course Syllabus

Course Title	ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING	Instructor	TYAN FENG
Course Class	TGEHB0A HONORS PROGRAM, 0A	Details	◆ General Course ◆ Required ◆ One Semester
Relevance to SDGs	SDG4 Quality education		

Departmental Aim of Education

Educate our undergraduate students to be successful engineers who have interdisciplinary knowledge, techniques and literacy.

Subject Departmental core competences

A. The ability to solve engineering problems using basic information techniques and computer software.(ratio:40.00)

B. The ability to recognize and treasure professional ethics.(ratio:20.00)

C. The ability to learn and integrate basic knowledge of mathematics, science and engineering.(ratio:40.00)

Subject Schoolwide essential virtues

1. A global perspective. (ratio:10.00)
2. Information literacy. (ratio:10.00)
3. A vision for the future. (ratio:10.00)
4. Moral integrity. (ratio:10.00)
5. Independent thinking. (ratio:30.00)
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	The primary objective of this course is to introduce the basic principles, techniques, and applications of Artificial Intelligence. Emphasis will be placed on the teaching of these fundamentals, not on providing a mastery of specific software tools or programming environments. Assigned projects promote a "hands-on" approach for understanding, as well as a challenging avenue for exploration and creativity.

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	Introduction to Machine Learning	Cognitive
2	MATLAB Recipes for Machine Learning	Cognitive
3	Neural Network	Cognitive
4	Training of Multi-Layer Neural Network	Cognitive
5	Neural Network and Classification	Cognitive
6	Deep Learning	Cognitive
7	Convolutional Neural Network	Cognitive

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

No.	Core Competences	Essential Virtues	Teaching Methods	Assessment
1	ABC	12345678	Lecture, Discussion	Testing, Study Assignments, Discussion(including classroom and online)
2	ABC	12345678	Lecture, Discussion	Testing, Study Assignments, Discussion(including classroom and online)

3	ABC	12345678	Lecture, Discussion	Testing, Study Assignments, Discussion(including classroom and online)
4	ABC	12345678	Lecture, Discussion	Testing, Discussion(including classroom and online)
5	ABC	12345678	Lecture, Discussion	Testing, Study Assignments, Discussion(including classroom and online)
6	ABC	12345678	Lecture, Discussion	Testing, Study Assignments, Discussion(including classroom and online)
7	ABC	12345678	Lecture, Discussion	Testing, Study Assignments, Discussion(including classroom and online)

Course Schedule

Week	Date	Course Contents	Note
1	111/09/05 ~ 111/09/11	Introduction to Machine Learning	P.K. 1
2	111/09/12 ~ 111/09/18	Introduction to Machine Learning	P.K. 1
3	111/09/19 ~ 111/09/25	MATLAB Recipes for Machine Learning	M.P. 2,3
4	111/09/26 ~ 111/10/02	Neural Network	P.K. 2
5	111/10/03 ~ 111/10/09	Neural Network	P.K. 2
6	111/10/10 ~ 111/10/16	Neutral Network	P.K. 2
7	111/10/17 ~ 111/10/23	Training of Multi-Layer Neural Network	P.K. 3
8	111/10/24 ~ 111/10/30	Training of Multi-Layer Neural Network	P.K. 3
9	111/10/31 ~ 111/11/06	Training of Multi-Layer Neural Network	P.K. 3
10	111/11/07 ~ 111/11/13	Midterm Exam Week	
11	111/11/14 ~ 111/11/20	Neural Network and Classification	P.K. 4
12	111/11/21 ~ 111/11/27	Neural Network and Classification	P.K. 4
13	111/11/28 ~ 111/12/04	Neural Network and Classification	P.K. 4
14	111/12/05 ~ 111/12/11	Deep Learning	P.K. 5
15	111/12/12 ~ 111/12/18	Deep Learning	P.K. 5

16	111/12/19～ 111/12/25	Deep Learning	P.K. 5
17	111/12/26～ 112/01/01	Convolutional Neural Network	P.K. 6
18	112/01/02～ 112/01/08	Final Exam Week	

Requirement	1.You will need to familiarize yourself with MATLAB.
Teaching Facility	Computer, Projector, Other (MATLAB)
Textbooks and Teaching Materials	Phil Kim, " MATLAB Deep Learning With Machine Learning, Neural Networks and Ar- tificial Intelligence," Apress, 2017.
References	Michael Paluszek and Stephanie Thomas, "MATLAB Machine Learning," Apress, 2017.
Number of Assignment(s)	8 (Filled in by assignment instructor only)
Grading Policy	◆ Attendance： % ◆ Mark of Usual：15.0 % ◆ Midterm Exam： 35.0 % ◆ Final Exam： 50.0 % ◆ 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 . **※ Unauthorized photocopying is illegal. Using original textbooks is advised. It is a crime to improperly photocopy others' publications.**