Tamkang University Academic Year 110, 1st Semester Course Syllabus

Course Title	MACHINE LEARNING	Instructor	YA-MEI, CHANG
Course Class	TLSXM1A MASTER'S PROGRAM, DEPARTMENT OF STATISTICS, 1A	Details	◆ General Course ◆ Selective ◆ One Semester
Relevance to SDGs	SDG9 Industry, Innovation, and Infrastructure		

Departmental Aim of Education

Ⅰ. Cultivate students with ability to conduct research on statistical theory.

Ⅱ. Cultivate students with ability for statistical programming.

Ⅲ. Cultivate students to become statistical professionals with management capabilities.

Ⅳ. Cultivate students with international perspectives.

Subject Departmental core competences

A. Ability to conduct research of statistical theory.(ratio:50.00)

B. Data analysis skills.(ratio:30.00)

D. Logical thinking ability.(ratio:20.00)

Subject Schoolwide essential virtues

2. Information literacy. (ratio:40.00)

3. A vision for the future. (ratio:30.00)

7. A spirit of teamwork and dedication. (ratio:30.00)

Course Introduction

Introduce machine learning concepts, methods and tools. The contents include linear regression, classification, resampling methods, models selection, regularization, GAM models, tree-based methods and support vector machine.

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	Machine learning concepts	Cognitive
2	Machine learning methods	Cognitive
3	Machine learning tools	Cognitive

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

No.	Core Competences	Essential Virtues	Teaching Methods	Assessment
1	ABD	237	Lecture, Discussion	Testing, Study Assignments, Report(including oral and written)
2	ABD	237	Lecture, Discussion	Testing, Study Assignments, Report(including oral and written)
3	ABD	237	Lecture, Discussion	Testing, Study Assignments, Report(including oral and written)

Course Schedule

Week	Date	Course Contents	Note
1	110/09/22 ~ 110/09/28	Introduction	
2	110/09/29 ~ 110/10/05	Linear Regression	
3	110/10/06 ~ 110/10/12	Classification	
4	110/10/13 ~ 110/10/19	Classification	
5	110/10/20 ~ 110/10/26	Resampling Methods	
6	110/10/27 ~ 110/11/02	Linear Models Selection and Regularization	

7	110/11/03 ~ 110/11/09	Linear Models Selection and Regularization	
8	110/11/10 ~ 110/11/16	Moving beyond Linearity	
9	110/11/17 ~ 110/11/23	Moving beyond Linearity	
10	110/11/24 ~ 110/11/30	Midterm Exam Week	
11	110/12/01 ~ 110/12/07	Moving beyond Linearity	
12	110/12/08 ~ 110/12/14	Tree-Based Methods	
13	110/12/15 ~ 110/12/21	Tree-Based Methods	
14	110/12/22 ~ 110/12/28	Tree-Based Methods	
15	110/12/29 ~ 111/01/04	Support Vector Mechines	
16	111/01/05 ~ 111/01/11	Support Vector Mechines	
17	111/01/12 ~ 111/01/18	Support Vector Mechines	
18	111/01/19 ~ 111/01/25	Final Exam Week	

Requirement	none
Teaching Facility	Computer, Projector
Textbooks and Teaching Materials	An Introduction to Statistical Learning: with Applications in R
References	
Number of Assignment(s)	(Filled in by assignment instructor only)
Grading Policy	◆ Attendance： 5.0 % ◆ Mark of Usual：30.0 % ◆ Midterm Exam： 30.0 % ◆ Final Exam： 30.0 % ◆ Other〈participation〉：5.0 %
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.**