Tamkang University Academic Year 106, 2nd Semester Course Syllabus

Course Title	MULTIPLE CRITERIA DECISION MAKING	Instructor	DZMITRY PADKAPAYEU
Course Class	TGLXM0A ELECTIVES COURSES BY COLLEGE OF BUSINESS AND MANAGEMENT-MASTER, 0A	Details	◆ Selective ◆ One Semester ◆ 2 Credits

Departmental Aim of Education

Ⅰ. Acquisition of professional knowledge.

Ⅱ. Learning effective self-planning.

Ⅲ. Theoretical application of practical matters.

Ⅳ. Interpersonal communication and teamwork.

Ⅴ. Analysis of problems and recommendations.

Ⅵ. Awareness of Ethics as a global citizen.

Departmental core competences

A. Advanced Knowledge and Capability.

B. Analytical and problem-solving abilities.

C. Oral and written communication.

D. Teamwork and interpersonal skills.

E. Students are able to demonstrate effective considerations of ethical issues in business situation.

Course Introduction	Many management problems are formulated as follows: given a finite set of alternatives evaluated by several criteria (attributes), select an alternative which is the most preferred for the decision maker, or rank the alternatives from the most preferred one to the least preferred one. The course introduces basic concepts of preference modelling in multiple criteria decision making problems. Using this knowledge, we critically analyze the common practice and reveal possible mistakes. Finally, we introduce some tools of multiple criteria decision analysis which helps making correct decisions.

The Relevance among Teaching Objectives, Objective Levels and Departmental core competences

I.Objective Levels (select applicable ones) :

(i) Cognitive Domain : C1-Remembering, C2-Understanding, C3-Applying, C4-Analyzing, C5-Evaluating, C6-Creating

(ii) Psychomotor Domain : P1-Imitation, P2-Mechanism, P3-Independent Operation, P4-Linked Operation, P5-Automation, P6-Origination

(iii) Affective Domain : A1-Receiving, A2-Responding, A3-Valuing, A4-Organizing, A5-Charaterizing, A6-Implementing

II.The Relevance among Teaching Objectives, Objective Levels and Departmental core competences :

(i) Determine the objective level(s) in any one of the three learning domains (cognitive, psychomotor, and affective) corresponding to the teaching objective. Each objective should correspond to the objective level(s) of ONLY ONE of the three domains.

(ii) If more than one objective levels are applicable for each learning domain, select the highest one only. (For example, if the objective levels for Cognitive Domain include C3,C5,and C6, select C6 only and fill it in the boxes below. The same rule applies to Psychomotor Domain and Affective Domain.)

(iii) Determine the Departmental core competences that correspond to each teaching objective. Each objective may correspond to one or more Departmental core competences at a time. (For example, if one objective corresponds to three Departmental core competences: A,AD, and BEF, list all of the three in the box.)

No.	Teaching Objectives	Relevance	
		Objective Levels	Departmental core competences
1	Teach students independent work on formulating and solving multiple criteria problems of decision making in management.	C3	ABD

Teaching Objectives, Teaching Methods and Assessment

No.	Teaching Objectives	Teaching Methods	Assessment
1	Teach students independent work on formulating and solving multiple criteria problems of decision making in management.	Lecture, Discussion, Practicum, Problem solving	Written test, Practicum, Report, Participation

This course has been designed to cultivate the following essential qualities in TKU students

Essential Qualities of TKU Students	Description
◇ A global perspective	Helping students develop a broader perspective from which to understand international affairs and global development.
◆ Information literacy	Becoming adept at using information technology and learning the proper way to process information.
◇ A vision for the future	Understanding self-growth, social change, and technological development so as to gain the skills necessary to bring about one's future vision.
◇ Moral integrity	Learning how to interact with others, practicing empathy and caring for others, and constructing moral principles with which to solve ethical problems.
◆ Independent thinking	Encouraging students to keenly observe and seek out the source of their problems, and to think logically and critically.
◇ A cheerful attitude and healthy lifestyle	Raising an awareness of the fine balance between one's body and soul and the environment; helping students live a meaningful life.
◆ A spirit of teamwork and dedication	Improving one's ability to communicate and cooperate so as to integrate resources, collaborate with others, and solve problems.
◇ A sense of aesthetic appreciation	Equipping students with the ability to sense and appreciate aesthetic beauty, to express themselves clearly, and to enjoy the creative process.

Course Schedule

Week	Date	Subject/Topics	Note
1	107/02/26 ~ 107/03/04		
2	107/03/05 ~ 107/03/11		
3	107/03/12 ~ 107/03/18		
4	107/03/19 ~ 107/03/25		
5	107/03/26 ~ 107/04/01		
6	107/04/02 ~ 107/04/08		
7	107/04/09 ~ 107/04/15		
8	107/04/16 ~ 107/04/22		
9	107/04/23 ~ 107/04/29		
10	107/04/30 ~ 107/05/06		
11	107/05/07 ~ 107/05/13		
12	107/05/14 ~ 107/05/20	Decision making problem formulation, preference modeling, good practices of problem solving.	

13	107/05/21 ~ 107/05/27	Parametric preference models, weight interpretation, Pareto optimality.	
14	107/05/28 ~ 107/06/03	Partial information of preferences, nonlinear parametric models, interactive approach.	
15	107/06/04 ~ 107/06/10		
16	107/06/11 ~ 107/06/17		
17	107/06/18 ~ 107/06/24		
18	107/06/25 ~ 107/07/01		

Requirement	Understanding of multiple criteria decision making concepts, ability to formulate own problems and prepare problem data, mastering of problem solving approaches using own decision making project.
Teaching Facility	Computer, Projector
Textbook(s)	Kaliszewski, Miroforidis, Podkopaev. Multiple Criteria Decision Making by Multiobjective Optimization: A Toolbox. Springer, 2016. Roy. Multicriteria Methodology for Decision Aiding. Springer, 1996.
Reference(s)	Vafaei N., Ribeiro R.A., Camarinha-Matos L.M. (2016) Normalization Techniques for Multi-Criteria Decision Making: Analytical Hierarchy Process Case Study. In: Technological Innovation for Cyber-Physical Systems, IFIP AICT series 470/2016, Springer, pp 261-269. Greco, S.; Ehrgott, M., Figueira, R. J. (Eds.) Multiple Criteria Decision Analysis: State of the Art Surveys. Springer New York, 2016. Korhonen, P. J.; Silvennoinen, K.; Wallenius, J. Oorni, A. A careful look at the importance of criteria and weights. Annals of Operations Research, 2013, 211, 565-578. Kaliszewski, I., Podkopaev, D. Simple additive weighting -- A metamodel for multiple criteria decision analysis methods. Expert Systems with Applications, 2016, 54, 155 - 161. Miettinen, K.; Hakanen, J.; Podkopaev, D. Interactive Nonlinear Multiobjective Optimization Methods. In: Greco, S.; Ehrgott, M. & Figueira, R. J. (Eds.) Multiple Criteria Decision Analysis: State of the Art Surveys, Springer New York, 2016, 927-976.
Number of Assignment(s)	3 (Filled in by assignment instructor only)
Grading Policy	◆ Attendance： 30.0 %　◆ Mark of Usual： %　◆ Midterm Exam： % ◆ Final Exam： 30.0 % ◆ Other〈Independent project〉：40.0 %
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.**