

開南大學課程綱要

開課單位	企業與創業管理研究所	授課教師	曾國雄	授課學期	96 學年度第 1 學期
課程名稱	決策科學				
英文名稱	Decision-Making Analysis				
學分數	3	上課時數	3	先修課程	無
課程目標	此為現代決策問題中最符合現實環境，本課程為訓練學生以全方位多層面的思考方式，使用多目標決策之各種分析方法與處理工具解決各類實際問題，以獲得最佳策略之有效方法。				
課程綱要	<p>自行編成或發表論文之期刊為主，對各方法發展緣由、體系、應用及其未來發展之方向加以探討。其中包括三個部分（含「明確集 (Crisp Sets)」、「模糊集 (Fuzzy Sets)」、「約略集 (Rough Sets)」、以及「灰朦集 (Grey Hazy Sets)」)：</p> <p>(1) 多屬性效用之理論與應用：包括多屬性效用理論之發展與展望、二元關係、偏好關係與效用函數、價值函數、成對比較之效用函數、區位評選、都市環境評估模式（多屬性效用之應用）、路線選擇行為之研究（多屬性效用理論之應用）、消費者個體選擇行為模式（Logit 模式、Neural Network Logit 模式、Logic 推論 Logit 模式）以及模糊多屬性效用之理論與應用等。</p> <p>(2) 多評準決策之理論與應用：包括多評準決策分析之回顧與展望、多評準決策分析方法之體系、層級分析法 (AHP) 與網路分析法 (ANP) 的內涵特性與應用、模糊與灰色多評準決策之理論與應用、非加法型模糊積分評估方法之理論與應用等。含 SAW、TOPSIS、VIKOR、ELECTRE、PROMETHEE、Fuzzy Integral (含 Fuzzy Measure) 等。</p> <p>(3) 多目標規劃之理論與應用：包括多目標規劃方法之發展及其體系、多目標規劃法之基礎理論、多目標決策問題之解法、多目標組合最佳化之基因演算法、多目標最適化之應用、多目標投資計畫方法、多目標投資規劃、De Nov 多目標規劃法、二階與多階之多目標規劃法、多階段之多目標規劃法、多階層多階段之動態多目標規劃法等，並引進模糊多目標規劃方法等之理論與應用等。</p>				
使用教材	<p>曾國雄，個人論文發表文獻。如個人資料(Tzeng's VITA)。</p> <p>Publications (2005 ~ 2007, 詳請參閱個人 VITA)</p> <p>A. Referred Papers</p> <p>2007 (IF: based on 2005)</p> <p>Information Management</p> <p>Gwo-Hshiung Tzeng, Cheng-Hsin Chiang, Chung-Wei Li (2007), Evaluating Intertwined Effects in E-learning Programs: A Novel Hybrid MCDM Model Based on Factor Analysis and DEMATEL, Expert Systems With Applications, Volume 32, Issue 4, July 2007, Pages 1028-1044. SCI (IF: 1.236)</p> <p>Financial Management (Credit Scoring, Option, Portfolio Selection)</p> <p>Wu, Chih-Hung; Tzeng, Gwo-Hshiung; Goo, Yeong-Jia; Fang, Wen-Chang (2007), "A Real-Valued Genetic Algorithm to Optimize the Parameters of Support Vector Machine for</p>				



Predicting Bankruptcy”, **Expert Systems With Applications**, *Expert Systems with Applications*, Volume 32, Issue 2, February 2007, Pages 397-408. **SCI (IF: 1.236)**

Marketing

Huang, Jih-Jeng; **Tzeng, Gwo-Hshiung (2007)**, “Marketing Segmentation Using Support Vector Clustering”, **Expert Systems With Applications**, Volume 32, Issue 2, February 2007, Pages 313-317. **SCI (IF: 1.236)**.

Shyng, Jhieh-Yu; **Tzeng, Gwo-Hshiung; Wang, Fan-Kuo (2007)**, “Rough Set Theory in Analyzing the Attributes of Combination Values for Insurance Market”, **Expert Systems with Applications**, Volume 32, Issue 1, January 2007, Pages 56-64. **SCI (IF: 1.236)**

Emergency Logistics Management

Gwo-Hshiung Tzeng, Hsin-Jung Cheng, Tsung Dow Huang, “Multi-objective Optimal Planning for Designing Relief Delivery Systems”, **Transportation Research Part E (Accepted) SSCI, SCI (IF: 0.904)**.

Resource Management (Strategic Alliance, Human Resource, Competence Sets Expansion, Knowledge Management)

Mei-Tai Chu, Joseph Shyu and **Gwo-Hshiung Tzeng (2007)**, “Comparison among three analytical methods for knowledge communities group-decision analysis”, *Expert Systems with Applications*, Volume 33, Issue 4, November 2007, Pages 1011-1024, **SCI (IF: 1.236)**.

Huang, Chi-Yo and **Gwo-Hshiung Tzeng (2007)**, “Post-Merger High Technology R&D Human Resources Optimization Through the De Novo Perspective”, in: *Advances in Multiple Criteria Decision Making and Human Systems Management: Knowledge and Wisdom*, Edited by Young Shi, David L. Olson, Antonie Stam, IOS Press, pp.47-64.

Service Quality (Air Transport)

James J. H. Liou and **Gwo-Hshiung Tzeng (2007)**, “Non-Additive Model for Evaluating Airline Service Quality”, **Journal of Air Transport Management**, Vol. 13, NO. 3, 2007, pp. 131-138 (IF=0.577)

James J. H. Liou, **Gwo-Hshiung Tzeng** and Han-Chun Chang (2007), “Airline safety measurement using a novel hybrid model”, **Journal of Air Transport Management**, Vol. 13, NO. 4, pp. 243-249 (IF=0.577)

Innovation Policy

Chi-Yo Huang and **Gwo-Hshiung Tzeng**, “Reconfiguring the Innovation Policy Portfolios for Taiwan's SIP Mall Industry”, **Technovation (Accepted) SCI (IF: 0.582, 2006) 2007/4/2**

Telecommunications (Performance Evaluation, MCDM)

Yang, Chyan; Fu, Guey Lan; **Tzeng, Gwo Hshiung (2007)**, Multicriteria Analysis of the Strategies to Open Taiwan's Mobile Virtual Network Operators Services,

International Journal of Information Technology and Decision Making, Vol. 6, No.1, pp.85-112. (SCI, 0.818, 2006)

Resource Management (Strategic Alliance, Human Resource, Competence Sets Expansion, Knowledge Management)

Mei-Fang Chen, **Gwo-Hshiung Tzeng**, Cherng G. Ding, "Combing fuzzy AHP with MDS in identifying the preference similarity of alternatives", **Applied Soft Computing (Accepted) (SCI, IF: 0.849, 2006)**

Benjamin Wang, Joseph Shyu, **Gwo-Hshiung Tzeng (2007)**, "Appraisal Model for Admitting New Tenants to the Incubation Center at ITRT", **International Journal of Innovative Computing, Information and Control**, Vol.3, No.1, 2007.

Technology Forecasting

Chi-Yo Huang and **Gwo-Hshiung Tzeng**, "Multiple Generation Product Life Cycle Predictions by Two Stage Fuzzy Linear Piecewise Regression Analysis, **Technological Forecasting and Social Change (Accepted) SSCI (IF:0.798, 2006)**.

Methods for MCDM

Opricovic, Serafim and **Tzeng, Gwo-Hshiung (2007)**, "Extended VIKOR Method in Comparison with Outranking Methods", **European Journal of Operational Research**, Volume 178, Issue 2, 16 April 2007, Pages 514-529 (SCI, SSCI, IF=0.918, 2006)

Ming-Shin Kuo, **Gwo-Hshiung Tzeng**, Wen-Chih Huang (2007), Group Decision Making Based on Concepts of Ideal and Anti-ideal Points in Fuzzy Environment, **Mathematical and Computer Modeling**, Volume 45, Issues 3-4, February 2007, Pages 324-339. (SCI) (IF: 0.432, 2006)

Methods for Rough Sets

Fan, Tuan-Fang; Liu, Duen-Ren; **Tzeng, Gwo-Hshiung (2007)**, Rough set-based logics for multicriteria decision analysis, **European Journal of Operational Research**, Volume 182, Issue 1, 1 October 2007, Pages 340-355, (SCI, SSCI, IF=0.918, 2006)

2006 (IF: based on 2006)

Financial Management (Credit Scoring, Option, Portfolio Selection)

Huang, Jih-Jeng; **Tzeng, Gwo-Hshiung**; Ong, Chorng-Shyong (2006), "Two-Stage Genetic Programming (2SGP) for the Credit Scoring Model", **Applied Mathematics and Computation**. Volume 174, Issue 2, 15 March 2006, Pages 1039-1053, SCI (IF: 0.816)

Huang, Jih-Jeng; **Tzeng, Gwo-Hshiung**, Ong, Chorng-Shyong (2006), "A Novel Algorithm for Uncertain Portfolio Selection", **Applied Mathematics and Computation**. Volume 173, Issue 1, 1 February 2006, Pages 350-359, SCI (IF: 0.816)

Lin, Chi-Ming; Huang, Jih-Jeng; Gen, Mitsuo; **Tzeng, Gwo-Hshiung (2006)**, "Recurrent neural

network for dynamic portfolio selection”, **Applied Mathematics and Computation**. *Applied Mathematics and Computation, Volume 175, Issue 2, 15 April 2006, Pages 1139-1146* **SCI (IF: 0.816)**

Resource Management (Strategic Alliance, Human Resource, Competence Sets Expansion, Knowledge Management)

Huang, Jih-Jeng; Ong, Chorng-Shyong; **Tzeng, Gwo-Hshiung (2006)**. “Optimal Fuzzy Multi-Criteria Expansion of Competence Sets Using Multi-Objectives Evolutionary Algorithms”, **Expert Systems with Applications**. *Volume 30, Issue 4, May 2006, Pages 739-745* **SCI (IF: 0.957)**

Huang, Jih-Jeng; **Tzeng, Gwo-Hshiung; Ong, Chorng-Shyong (2006)**. “Choosing Best Alliance Partners and Allocating Optimal Alliance Resources Using the Fuzzy Multi-Objective Dummy Programming Model”, **Journal of Operational Research Society**, Vol. 58, pp.1216-1223. (**SSCI, SCI=0.597**)

Telecommunications (Performance Evaluation, MCDM)

Tsai, Hsiang-Chih; Chen, Chun-Mei; **Tzeng, Gwo-Hshiung (2006)**, “The Comparative Productivity Efficiency for Global Telecoms”, **International Journal of Production Economics**. *Volume 103, Issue 2, October 2006, Pages 509-526*, **SCI, SSCI (IF=1.183)**

Technology Management

Chu, Mei-Tai; Shyu, Joseph Z.; **Tzeng, Gwo-Hshiung**, Using Non-Additive Fuzzy Integral to Assess Performances of Organization Transformation via Communities of Practice, **IEEE Transactions on Engineering Management (Accepted)**. (**SSCI, SCI (IF: 0.864)**)

Chiu, Yi-Chia; Chen, Benson; Shyu, Joseph Z. and **Tzeng, Gwo-Hshiung (2006)**, “An Evaluation Model of New Product Launch Strategy”, **Technovation** *Volume 26, Issue 11, November 2006, Pages 1244-1252 (Accepted) (SCI=0.589)*

Information Management

Chou, Tzy-Yuan; Chou, Seng-cho T and **Tzeng, Gwo-Hshiung (2006)**, “Evaluating IT/IS Investments: a Fuzzy Multi-Criteria Decision Model Approach”, **European Journal of Operational Research (Accepted)**. *Volume 173, Issue 3, 16 September 2006, Pages 1026-1046 (SCI, SSCI=0.918)*

Supply Chain (Multiobjective Planning)

Tzeng, G.-H., Tang T.-I., Hung, Y.-M. and Chang, M.-L. (2006), Multiple-objective planning for a production and distribution model of the supply chain: case of a bicycle manufacturer, **Journal of Scientific & Industrial Research**, Vol.65, April 2006, pp.309-320. **SCI (IF: 0.232)**.

Methods for MCDM

Yu, Rachung; **Tzeng, Gwo-Hshiung**, "A Soft Computing Method for Multi-criteria Decision Making with Dependence and Feedback", **Applied Mathematics and Computation**, Vol. 180, No. 1, pp. 63-75. SCI (IF=0.688)

Methods for Rough Sets

Fan, Tuan-Fang; Liu, Duen-Ren; **Tzeng, Gwo-Hshiung** (2006), Arrow decision logic for relational information systems, **Transactions on Rough Sets V, LNCS 4100**, pp. 240-262.

Methods for Data Processing (Statistical and Multivariate Analysis, Data Mining, Rough Sets)

Huang, Jih-Jeng; **Tzeng, Gwo-Hshiung**; Ong, Chorng-Shyong (2006), "A novel algorithm for dynamic factor analysis", **Applied Mathematics and Computation**. Volume 175, Issue 2, 15 April 2006, Pages 1288-1297 (SCI=0.816)

Huang, Jih-Jeng; **Tzeng, Gwo-Hshiung**; Ong, Chorng-Shyong, "Interval Multidimensional Scaling for Group Decision Using Rough Set Concept", **Expert Systems with Applications**, Volume 31, Issue 3, October 2006, Pages 525-530 SCI (IF: 0.957)

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Financial Management (Credit Scoring, Option, Portfolio Selection)

Huang, Jih-Jeng; Ong, Chorng-Shyong; **Tzeng, Gwo-Hshiung**, "Building Credit Scoring Models Using Genetic Programming", **Expert Systems With Applications**, Volume 29, Issue 1, July 2005, Pages 41-47. SCI (IF: 1.236)

Lee, Cheng-Few; **Tzeng, Gwo-Hshiung**; Wang, Shin-Yun, "A New Application of Fuzzy Set Theory to the Black-Scholes Option Pricing Model", **Expert Systems With Applications**, Volume 29, Issue 2, August 2005, Pages 330-342. SCI (IF: 1.236)

Lee, Cheng-Few; **Tzeng, Gwo-Hshiung**; Wang, Shin-Yun, "A Fuzzy Set Approach to Generalize CRR model: An Empirical Analysis of S&P 500 Index Option", **Review of Quantitative Finance and Accounting**, Volume 25, Number 3, November 2005, Pages:255 – 275. (Springer)

Huang, Jih-Jeng; Ong, Chorng-Shyong; **Tzeng, Gwo-Hshiung** (2005). "A Novel Hybrid Model for Portfolio Selection", **Applied Mathematics and Computation**. Volume 169, Issue 2, 15 October 2005, Pages 1195-1210. SCI (IF: 0.688)

Resource Management (Strategic Alliance, Human Resource, Competence Sets Expansion, Knowledge Management)

Ong, Chorng-Shyong, Huang, Jih-Jeng, and **Tzeng, Gwo-Hshiung**, "Motivation and Resource Allocation for Strategic Alliance through De Novo Perspective", **Mathematical and Computer Modeling**, Volume 41, Issues 6-7, March-April 2005, Pages 711-721. (SCI=0.422)

Tzeng, Gwo-Hshiung; Chang, Chun-Yen; and Lo, Mei-Chen, "The Simulation and Forecast

Model for Human Resources of Semiconductor Wafer Fab Operation”, **International Journal of Industrial Engineering and Management Systems**, Vol.4, No.1, pp.47-53.

Chen, Mei-Fang; **Tzeng, Gwo-Hshiung**; and Michael Tang, “Fuzzy MCDM Approach for Evaluation of Expatriate Assignments”, **International Journal of Information Technology and Decision Making**, Vol. 4, No. 2, pp. 1-20, 2005. **SCI-Expanded**

Lo, Mei-Chen; Chan, Chun-Yen; **Tzeng, Gwo-Hshiung**; Michnik, Jerzy, “Evaluating the Information Quality of Knowledge Management for Effective e-Business Performance: Case of Electronic Industry”, **International Journal of Advanced Media and Communication (Accepted)**

Wu, Wei-Wen; Lee, Yu-Ting, and **Tzeng, Gwo-Hshiung**, “Simplifying the Manager Competency Model by Using the Rough Set Approach”, in: Rough Sets, Fuzzy Sets, Data Mining, and Granular Computing, by Dominik Slezak, JingTao Yao, James F. Peters, Wojciech Ziarko, Xiaohua Hu (Eds.), **LNAI 3642 (Part II)**, pp.484-495, 2005. **(SCI=0.302)**

Tzeng, Gwo-Hshiung; Chang, Chun-Yen; Lo, Mei-Chen, “MADM Approach for Effecting Information Quality of Knowledge Management”, **International Journal of Information Systems for Logistics and Management**, Vol. 1, No.1, pp.55-67, 2005.

Strategic Management (Sustainable Development, Alternative-fuel Energy, Fuel Cell)

Chiou, Hua-Kai, **Tzeng, Gwo-Hshiung** and Cheng, Ding-Chou, “Evaluating sustainable fishing development strategies using a fuzzy MCDM approach”, **OMEGA (International Journal of Management Science)**, *Volume 33, Issue 3, June 2005, Pages 223-234*. **SCI, SSCI (IF: 0.648)**

Tzeng, Gwo-Hshiung and Lin, Cheng-Wei, Opricovic, Serafim “Multi-criteria analysis of alternative-fuel buses for public transportation”, **Energy Policy**, Vol. 33, No. 11, pp.1373-1383, 2005. **SSCI, SCI (IF: 0.958)**

Yuan, Benjamin J.C.; Wang, Chien-Pin; **Tzeng, Gwo-Hshiung**; Emerging Approach for Strategy Evaluation in Fuel Cell Development, **International Journal of Technology Management**, Vol. 32, No. 3/4, pp.302-338, 2005. **(SSCI, SCI=0.24)**

Technology Management

Hsu, Yeou-Geng, Shyu, Joseph Z., and **Tzeng, Gwo-Hshiung** “Policy Tools on the Formation of New Biotechnology Firms in Taiwan”, **Technovation**, Vol. 25, No. 3, *Pages 281-292*, 2005. **(SCI=0.497)**

Information Management

Tzeng, Gwo-Hshiung; Ou Yang, Yu-Ping; Lin, Chin-Tsai, Chen, Chie-Bein, “Hierarchical MADM with Fuzzy Integral for Evaluating Enterprise Intranet Web Sites”, **Information Sciences**, *Volume 169, Issues 3-4, 1 February 2005, Pages 409-426*. **(SCI, SSCI=0.723)**

Yuan, Benjamin; **Tzeng, Gwo-Hshiung**; Kang, Tsai-Hua; Cheng, Chin-Chuan, “MADM Approach for Selecting the Consignment Performance with Cooperating the Information Service Computer Room of De-Lin Institute of Technology”, **Journal of Information Management**, Vol. 12, No. 1, pp. 131-148, 2005 (Chinese, Taiwan) **TSSCI**

Marketing

Chiu, Yu-Jing; Chen, Hsiao-Chi; Shyu, Joseph Z.; **Tzeng, Gwo-Hshiung**, "Marketing Strategy Based on Customer Behavior for the LCD-TV", **International Journal and Decision Making**, Vol. 7, No.2/3, pp.143-165, 2006.

Telecommunications (Performance Evaluation, MCDM)

Tsai, Hsiang-Chih; Chen, Chun-Mei; **Tzeng, Gwo-Hshiung**, "The Comparative Productivity Efficiency for Global Telecoms", **International Journal of Production Economics**. (Accepted) SCI (IF=1.008)

Yang, Chyan; Fu, Guey Lan; **Tzeng, Gwo Hshiung**, "Creating a Win-Win in the Telecommunications Industry: The Relationship between MVNOs and MNOs in Taiwan", **Canadian Journal of Administration Sciences** (Accepted) SSCI (IF=0.191)

Environmental Management

Yen, Ke-Chin; **Gwo-Hshiung Tzeng**; Lin, Jen-Jia, 2005, "Performance Standards Control Rules for Sustainable Management of Coastal Wetland by Using Grey Relation", **Journal of City and Planning**, Vol. 32, No. 4, pp.421-441. TSSCI (Taiwan)

Yen, Ke-Chin; Lin, Jen-Jia; **Gwo-Hshiung Tzeng**, 2005, "Applying Eco-planning and Fuzzy AHP on the Evaluation of the Development Potentiality of Land Use in the Waterfront Environment", **Journal of Architecture and Planning**, Vol.6, No.1, pp.21-42. (Taiwan)

Methods for Data Processing (Statistical and Multivariate Analysis, Data Mining, Rough Sets)

Huang, Jih-Jeng; Ong, Chorng-Shyong; **Tzeng, Gwo-Hshiung**, "Multidimensional Data in Multidimensional Scaling Using the Analytic Network Process", **Pattern Recognition Letters**, Volume 26, Issue 6, 1 May 2005, Pages 755-767. SCI (IF=1.138)

Huang, Jih-Jeng; Ong, Chorng-Shyong; **Tzeng, Gwo-Hshiung** (2005), "Model Identification of ARIMA Family Using Genetic Algorithms", **Applied Mathematics and Computation**. Volume 164, Issue 3, 25 May 2005, Pages 885-912. (SCI=0.688)

Yu, Jing-Rung; **Tzeng, Gwo-Hshiung**; Li, Han-Lin, "Interval Piecewise Regression Model with Automatic Change-Point Detection by Quadratic Programming", **International Journal of Uncertainty, Fuzziness and Knowledge-Based Systems**, Volume 13, Number 3, June 2005, pp.347-361. (SCI=0.43)

Chen, Hsiao-Chi; Hu, Yi-Chung; Shyu, Joseph Z.; **Tzeng, Gwo-Hshing**, "Comparison Analysis of Possibility Grey Forecasting and Fuzzy Regression to the Stock-Market Price in Taiwan", **Journal of Information Management**. Vol. 12, No. 1, pp. 195-214, 2005 (Chinese, Taiwan) TSSCI

Huang, Jih-Jeng; Ong, Chorng-Shyong; **Tzeng, Gwo-Hshiung** (2005). "Fuzzy Principal Component Regression (FPCR) for Fuzzy Input and Output Data", **International Journal of Uncertainty and Knowledge-based Systems**. Vol. 14, No. 1, 2006. (Accepted) (SCI=0.43)

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- 曾國雄等編著，多目標決策分析(II)：多評準決策之理論與應用講義。
- 曾國雄等編著，多目標決策分析(III)：多目標規劃之理論與應用講義。
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