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開課班級：碩熱農一A

授課老師：廖世義

學分數：3

#### 課程大綱：

In this engaging course, students will not only master advanced skills in quantitative research but also immerse themselves in the dynamic world of statistical analysis software, including SPSS, AMOS, Smart-PLS, and more. Through exciting mid-term and final sharing sessions, each student will gain profound insights into the realms of agricultural economics, finance, business management, marketing, and animal husbandry, exploring real-world applications that bring theories to life.

#### outline:

Topics in this course include an introduction to the basic concepts of linear structure, explanation of model fit indicators, path analysis, confirmatory factor analysis, shoe-pull procedure and model validity verification. Additionally, there is a discussion of various intermediary and interference models and their mixed models, group comparison of group models, and a discussion of Bayesian analysis, all utilized as practical exercises through the application of SPSS, AMOS, and Smart PLS. Cross-level research topics are derived from nested data structures and theoretical models to the setting of hierarchical linear models (HLM) and context models, and the application of longitudinal research development and related research topics are discussed to achieve the teaching objectives of this course, helping students understand the concepts and practical applications of advanced quantitative research methods in recent years.

#### 教學型態：

課堂教學+遠距輔助教學(同步、非同步)

#### 成績考核方式：

平時成績:30%

期中考:30%

期末考:30%

其它:Attendance 10%%

#### 本科目教學目標：

The main purpose of this course is to help students understand and be able to construct structural equation models and multi-level models for their research. Additionally, the course aims to enhance comprehension of practical applications related to these models, enabling learners to understand and review research papers in the field. The teaching goals will be accomplished through the clarification of theoretical concepts, practical applications, and relevant issues. - The theory and application of linear structure (Path Analysis & Regression Analysis) - Mediation model and effect (Similarities & Moderation Analysis / Path model) - Multiple Mediation model and effect (Multiple Mediation / Various mediation models) - Parallel mediation & Sequential mediation - Moderation Model and Effect - Introduction to Confirmatory Factor Analysis (EFA & CFA) - Understand and be able to critique published SEM articles and research - Conduct their SEM analysis with confidence - Formulate, evaluate, and specify SEM model

#### 參考書目：

A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM) Introduction to Statistical Mediation Analysis Introduction to Mediation, Moderation, and Conditional Process Analysis Structural Equation Modeling With AMOS Partial Least Squares: Regression and Structural Equation Models



## 課程進度表：

週次	起訖月日	授課單元(內容)	備註
第1週	2.19~2.25	Add/Drop Week Class introduction, Grading system and software installation	8日正式上課。8~12日課程加退選，轉學(系)生、復學生及延修生選課，雙主修、輔系申請，12日申辦抵免學分截止日
第2週	2.26~3.03	SPSS Software interface and working environment	
第3週	3.04~3.10	The theory and application of linear structure 1.An introduction to Structural Equation Modeling 2.Differences Between Path Analysis and Regression Analysis	28日(日)孔子誕辰紀念日/教師節(放假),29日(一)補假
第4週	3.11~3.17	The theory and application of linear structure 1.CB-SEM versus PLS-SEM (VB-SEM) 2.Difference between the formative and reflective indicators	29日成績優異提前畢業者提出申請截止日
第5週	3.18~3.24	AMOS interface and working environment 1.Regression, interaction, and path analysis 2.Model-identification and verification of causality	6日(一)中秋節(放假)，10日(五)國慶日(放假)
第6週	3.25~3.31	Mediation model and effect 1.Understand the similarities and differences between mediation and moderation analysis 2.Path model estimation	14日學生宿舍安全輔導暨複合式防災疏散演練。18日多益測驗
第7週	4.01~4.07	Multiple Mediation model and effect 1.Multiple Mediation effect verification 2.Discussion of various mediation models	24日(五)補假，25日(六)光復暨古寧頭大捷日(放假)。
第8週	4.08~4.14	Parallel mediation & Sequential mediation Bayesian Estimand, custom Estimand	30日校課程委員會
第9週	4.15~4.21	Midterm Personal Exercise & Homework Reports	3~9日期中考試
第10週	4.22~4.28	Moderation Model and Effect Case Study and Paper Reading	13日教務會議,16日教師期中成績上網登錄截止日
第11週	4.29~5.05	Mixed Model analysis and Multi-groups Comparison	
第12週	5.06~5.12	Introduction to Confirmatory Factor Analysis 1.The similarities and differences between EFA and CFA 2.Second-order CFA	24~28體育運動週。24日校園路跑。27日運動大會夜間開幕，28日運動大會活動，29日101週年校慶活動日，照常上班
第13週	5.13~5.19	Identification, verification, and evaluation of models 1.Overall model fit assessment 2.Evaluation of measurement model	



		3.Evaluation of structural model	
第14週	5.20~5.26	SmartPLS (1) Software interface and working environment	12日申請停修課程截止日
第15週	5.27~6.02	SmartPLS (1) Software interface and working environment Mediation Model and its extended application	
第16週	6.03~6.09	SmartPLS (2) Moderation Model and its extended Application	22日校務會議。25日行憲紀念日(放假)
第17週	6.10~6.16	SmartPLS (3) Mixed Model Analysis & Case Study and Paper Reading	1日(四)開國紀念日(放假)
第18週	6.17~6.23	Final Personal Exercise & Homework Reports	5~11日期末考試，10~11日學生退宿