國立東華大學

教學計劃表　Syllabus

課程名稱(中文) Course Name in Chinese	時間序列分析與預測			學年/學期 Academic Year/Semester	112/2
課程名稱(英文) Course Name in English	Time series analysis and forecasting				
科目代碼 Course Code	IM__M0240	系級 Department & Year	碩士	開課單位 Course-Offering Department	資訊管理學系
修別 Type	選修 Elective	學分數/時間 Credit(s)/Hour(s)	3.0/3.0		
授課教師 Instructor	/張漢利				
先修課程 Prerequisite					

課程描述　Course Description

This Time Series and Forecasting course is structured to provide students with a thorough grounding in the analysis of time-dependent data and the application of forecasting techniques. The curriculum covers a broad spectrum of topics, from basic statistics and visualization to advanced forecasting methods, including ARIMA, seasonality forecasting, and exponential models. It also integrates cutting-edge approaches using machine learning, deep neural networks, and convolutional models for time series analysis. The course is punctuated with practical sessions for applying learned techniques, a midterm project to assess comprehension and application, and a final presentation to showcase students' forecasting projects. Scheduled breaks and a consultation week are included to enhance learning outcomes and address individual queries.

課程目標　Course Objectives

The course aims to introduce the essential knowledge related to time series analysis and forecasting, such as statistics, regression analysis, exponential smoothing, ARIMA modeling, and machine learning. By the end of the course, the students are expected to develop practical skills to analyze time series data effectively and be able to model forecasting problems and anomaly detection in time series.

	系專業能力 Basic Learning Outcomes	課程目標與系專業能力相關性 Correlation between Course Objectives and Dept.'s Education Objectives
A	培育具備創造與思考能力、服務精神、團隊合作以及國際觀Nurture ability regarding creativity and thinking, spirit of service, teamwork and international view	●
B	培養具備資訊專業知識與技能Nurture professional ability and skill regarding information	○
C	培養具備資訊科技與管理領域之知識整合應用能力Nurture integrated ability regarding information technology and management	●
D	培養具備解決問題之資訊剖析、組織、整合、應用以及表達的能力Nurture ability of information analysis, organization, integration, application, and expression regarding problem solving	●
E	培養具備獨立研究、領導智能與資訊創新的能力Nurture ability regarding independent research, leadership and information innovation	●

圖示說明Illustration ：● 高度相關 Highly correlated ○中度相關 Moderately correlated

授 課 進 度 表 Teaching Schedule & Content

週次Week	內容 Subject/Topics	備註Remarks
1	Orientation	

2	Handling date and time data	
3	Handling missing data	
4	Exploratory data analysis	
5	Basic forecasting	
6	Statistical methods I	
7	Statistical methods II	
8	Holiday	
9	期中考試週 Midterm Exam	
10	Machine learning for time series	
11	Deep neural networks	
12	Recurrent neural networks	
13	Convolutional models	
14	Paper presentation	
15	Consultation week	
16	Final presentation	
17	Holiday	
18	Tentative teaching	

教 學 策 略 Teaching Strategies

☑ 課堂講授 Lecture   ☑ 分組討論Group Discussion   ☐ 參觀實習 Field Trip

☐ 其他Miscellaneous:

教 學 創 新 自 評 Teaching Self-Evaluation

創新教學(Innovative Teaching)

☐ 問題導向學習(PBL)   ☐ 團體合作學習(TBL)   ☐ 解決導向學習(SBL)

☐ 翻轉教室 Flipped Classroom   ☐ 磨課師 Moocs

社會責任(Social Responsibility)

☐ 在地實踐Community Practice   ☐ 產學合作 Industy-Academia Cooperation

跨域合作(Transdisciplinary Projects)

☐ 跨界教學Transdisciplinary Teaching   ☐ 跨院系教學Inter-collegiate Teaching

☐ 業師合授 Courses Co-taught with Industry Practitioners

其它 other:

學期成績計算及多元評量方式 Grading & Assessments									
配分項目 Items	配分比例 Percentage	多元評量方式 Assessments							
		測驗 會考	實作 觀察	口頭 發表	專題 研究	創作 展演	卷宗 評量	證照 檢定	其他
平時成績 General Performance	10%								
期中考成績 Midterm Exam	15%								
期末考成績 Final Exam	35%								
作業成績 Homework and/or Assignments	25%								
其他 Miscellaneous (_____)	15%								

評量方式補充說明
Grading & Assessments Supplemental instructions

教科書與參考書目（書名、作者、書局、代理商、說明）
Textbook & Other References (Title, Author, Publisher, Agents, Remarks, etc.)

課程教材網址(含線上教學資訊,教師個人網址請列位於本校內之網址)
Teaching Aids & Teacher's Website(Including online teaching information. Personal website can be listed here.)

其他補充說明（Supplemental instructions）