國立東華大學

教學計劃表　Syllabus

課程名稱(中文) Course Name in Chinese	隨機模型AA				學年/學期 Academic Year/Semester		113/2
課程名稱(英文) Course Name in English	Stochastic Models						
科目代碼 Course Code	AM__4020AA	系級 Department & Year	學三	開課單位 Course-Offering Department		應用數學系	
修別 Type	學程 Program	學分數/時間 Credit(s)/Hour(s)		3.0/3.0			
授課教師 Instructor	/王家禮						
先修課程 Prerequisite	/#基礎機率						

課程描述　Course Description

This is the first course in applied probability of operations research.
We will review basic applied probability tools, such as conditioning technique, and introduce a few common
stochastic models that include Markov chains and Poisson processes.
My approach to teach this course is always to motivate the student by examples, whereas theory and proofs will be kept to a minimum. The approach is, thought, heuristic and non-rigorous, it attempts to develop students' intuition, which, hopefully, will enable students to think probabilistically and enhance their ability of modeling.

課程目標　Course Objectives

介紹Poisson 過程，連續時間馬可夫過程、重要例子、
基本理論等。
Poisson process, continuous time Markov Chains. Theory
And examples.

	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	具備基本數學知識及邏輯推理能力。Have well-founded background in mathematics and be capable of logical reasoning.	●
B	具備機率、統計及相關領域的知識與應用能力。Have the knowledge of probability and statistics and the related field, and the corresponding application ability	●
C	具備軟體應用與統計計算能力。 Be able to use computer software for statistical computation in real applications.	

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	Review of Elementary Probability	
2	Review of Conditional Probability	
3	Review of Conditional Probability	
4	Discrete-Time Markov Chains	

5	Discrete-Time Markov Chains	
6	Discrete-Time Markov Chains	
7	Discrete-Time Markov Chains	
8	Discrete-Time Markov Chains	
9	期中考試週 Midterm Exam	
10	Review of Exponential Distribution	
11	Review of Exponential Distribution	
12	Poisson Process	
13	Poisson Process	
14	Poisson Process	
15	Continuous-Time Markov Chains	
16	Continuous-Time Markov Chains	
17	期末考試週 Final Exam	
18	Optional Topics	

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									
期中考成績 Midterm Exam	30%								
期末考成績 Final Exam	30%								
作業成績 Homework and/or Assignments	40%								
其他 Miscellaneous (_____)									

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.)
Introduction to Probability Models, 12th Ed., Sheldon Ross

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）
Pre-requisite Course：Calculus and fundamental probability course