國立東華大學

教學計劃表 Syllabus

課程名稱(中文) Course Name in Chinese	存貨分析與管理			學年/學期 Academic Year/Semester	114/2
課程名稱(英文) Course Name in English	Inventory Analysis and Management				
科目代碼 Course Code	GSLMM0230	系級 Department & Year	碩士	開課單位 Course-Offering Department	運籌管理研究所
修別 Type	必修 Required	學分數/時間 Credit(s)/Hour(s)	3.0/3.0		
授課教師 Instructor	/黃郁文				
先修課程 Prerequisite					

課程描述 Course Description

This is an introductory course for analytical models and methods in inventory control. The course is made up of four components. The first component, of two lectures, is an introduction that discusses common features of inventory systems and basic analytical background for the course. The second component, of four lectures, covers classical inventory models: the EOQ and its variants, both for deterministic and stochastic settings, and solution methods for dynamic lot sizing problems. The third component, of two lectures, discusses papers in supply chains integration for EOQ-based models. The last component, of five lectures, covers classical single-period stochastic inventory models (Newsboy models) and their extensions to supply chain contracts.
To facilitate learning, computational programs for most of the inventory models covered in lecture will be provided in Mathematica. Some after-class workshops for Mathematica will be arranged to help students doing assignments.

課程目標 Course Objectives

Study and discuss basic inventory modeis including solution techniques in various problems related to continuous/periodic review multi-stage production and distribution systems.

	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	基礎供應鏈與運籌管理知識Foundations on supply chain and logistics management	○
B	供應鏈與運籌之系統管理知識Knowledge on managing systems in supply chain and logistics	●
C	供應鏈與運籌之分析工具知識Knowledge on logical and analytical tools for supply chain and logistics	●
D	語文表達能力Language and communication skills	○

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	Introduction of Inventory Systems	
2	Introduction of Inventory Systems	

3	Deterministic Models with Constant Demand Rate	
4	Deterministic Models with Constant Demand Rate	
5	Deterministic Models with Discrete Demand	
6	Deterministic Models with Discrete Demand	
7	No class	
8	Deterministic Models with Probabilistic Variations	
9	Midterm	
10	Single-Period Stochastic Models: Newsvendor Models	
11	Multiple-Period Stochastic Models: Optimality of Based Stock Policy	
12	Supply Chain Integration, Single-Supplier, Single-Retailer	
13	Supply Chain Coordination with Common Replenishment Epochs	
14	Supply Chain Coordination with Vendor-managed Inventory; Efficient replenishment in the distribution channel	
15	Supply Chain Coordination with Contracts; Coordinating the Newsvendor; Wholesale-price contract	
16	Buyback contract & Revenue-sharing contract	
17	Final	
18	No class	

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(含出缺席) General Performance (Attendance Record)									
期中考成績 Midterm Exam	25%								
期末考成績 Final Exam	25%								
作業成績 Homework and/or Assignments	50%								
其他 Miscellaneous (_____)									

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

The course will be conducted as a graduate seminar in a lecture-discussion mode, led by the instructor. Students are expected to pre-read the assigned material and participate in class discussions. Reading and Discussing classic works and recent papers on techniques and applications are required.
To facilitate learning, computational programs for most of the inventory models covered in lecture will be provided in Mathematica. Some after-class workshops for Mathematica will be arranged to help students doing assignments.
Exams: There will be 2 exams in the course.

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.)

References

[1] Cachon, G.P. (2003) Supply chain coordination with contracts, in: T. de Kok, S. Graves (Eds.), Handbooks in Operations and Management Science: Supply Chain Optimization, North-Holland Publishers, Amsterdam, Netherlands.
[2] Heizer, Render and Munson (2020) Operations Management, 13th ed., Pearson/Prentice Hall.
[3] Porteus, E.L. (2002) Foundations of Stochastic Inventory Theory, Stanford: Stanford University Press.
[4] Stevenson, W.J. (2020) Operations Management, 14th ed., McGraw Hill.
[5] Tersine, R.J. (1994) Principles of Inventory and Materials Management, Englewood Cliffs: Prentice Hall.

There are many good texts in inventory analysis and management. Other than the above, students may also like to check the following.

[6] Axsater, S. (2006) Inventory Control, 2nd ed., New York: Springer.
[7] Bertsekas, D. P. (1987) Dynamic Programming, Prentice-Hall.
[8] Denardo, E. V., (1982) Dynamic Programming, Prentice-Hall.
[9] Nahmias and Olsen (2015) Production and Operations Analysis, 7th ed., Waveland Press.
[10] Zipkin, P.H. (2000) Foundations of Inventory Management, Boston: McGraw-Hill.

The following papers will be used as the introduction to supply chain integration before discussing supply chain contracts.

[11] Banerjee, A. (1986) A Joint Economic-Lot-Size Model for Purchaser and Vendor, Decision Sciences, 17(3), 292-311.
[12] Clark, A.J. and Scarf H. (1960) Optimal Policies for a Multi-Echelon Inventory Problem, Management Science, 6(3), 475-490.
[13] Dong, Y., Shankar V. and Dresner M. (2007) Efficient replenishment in the distribution channel, Journal of Retailing 83(3), 253-278
[14] Goyal, S.K. (1976) An Integrated Inventory Model for a Single Supplier-Single Customer Problem, International Journal of Production Research, 15(1), 107-111.
[15] Goyal, S.K. (1988) A Joint Economic-Lot-Size Model for Purchaser and Vendor: A Comment, Decision Sciences, 19(1), 236-241.
[16] Iglehart D.L. (1963) Dynamic Programming and Stationary Analysis of Inventory Problems, in: H.E. Scarf, D.M. Gilford, M.W. Shelly (Eds.), Multistage Inventory Models and Techniques, pp.1-31, Stanford U. Press.
[18] Karlin, S. (1958) Optimal Inventory Policy for the Arrow-Harris-Marschak Dynamic Model, in: K.J Arrow, S. Karlin, H. Scarf (Eds.), Studies in the Mathematical Theory of Inventory and Production, pp.135-154, Stanford U. Press.
[19] Lu, L. (1995) A One-Vendor Multi-Buyer Integrated Inventory Model, European Journal of Operational Research, 81, 312-323.
[20] Mishra, A.K. (2004) Selective discount for supplier－buyer coordination using common replenishment epochs, European Journal of Operational Research, 153, 751-756.
[21] Viswanathan, S. and Piplani R. (2001) Coordinating supply chain inventories through common replenishment epochs, European Journal of Operational Research, 129, 277-286.
[22] Yao Y., Evers, P.T. and Dresner M.E. (2007) Supply chain integration in vendor-managed inventory, Decision Support Systems, 43, 663-674.

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)

Office hours: by appointment through email (hjw@gms.ndhu.edu.tw) and you will receive a Google Meet link.