

課程中文名稱 Title of Course in Chinese : **軟體工程**

課程英文名稱 Title of Course in English : **Software Engineering**

應修系級 Major : **資訊管理研究所1 , 財務金融英語碩士學位學程1 , 財務金融英語碩士學位學程2 , 智慧醫療管理英語碩士學位學程1 , 電子商務碩士學分學程 ,**

授課教師 Instructor : **戴敏育**

選修類別 Required/Elective : **選**

全半學年 Whole or Half of the Academic Year : **半學年**

學 分 Credit(s) : **3** 學分

時 數 Hour(s) : **3** 小時

教師網址 Instructor's Website : <http://web.ntpu.edu.tw/~myday/>

教師專長 Instructor's Specialty : **電子商務 (Electronic Commerce), 金融科技 (Financial Technology), 人工智慧 (Artificial Intelligence), 大數據分析 (Big Data Analytics), 資料探勘與文字探勘 (Data Mining and Text Mining)**

課綱附檔 Attachments :

先修科目 : **無**

Prerequisites : **None**

教學目標 :

1. 瞭解軟體工程基本概念、研究議題、與實務操作。
2. 具備軟體工程實務操作能力。
3. 進行軟體工程相關之資訊管理研究。

Course Objectives :

1. Understand the fundamental concepts and research issues of software engineering.
2. Equip with Hands-on practices of software engineering.
3. Conduct information systems research in the context of software engineering.

內容綱要 :

This course introduces the fundamental concepts, research issues, and hands-on practices of software engineering. Topics include Introduction to Software Engineering, Software Products and Project Management: Software product management and prototyping, Agile Software Engineering: Agile methods, Scrum, and Extreme Programming, Features, Scenarios, and Stories, Software Architecture: Architectural design, System decomposition, and Distribution architecture, Cloud-Based Software: Virtualization and containers, Everything as a service, Software as a service, Cloud Computing and Cloud Software Architecture, Microservices Architecture, RESTful services, Service deployment, Security and Privacy, Reliable Programming, Testing: Functional testing, Test automation, Test-driven development, and Code reviews, DevOps and Code Management: Code management and DevOps automation, and Case Study on Software Engineering.

Course Outline :

[Software Engineering] This is an EMI Full English Course.

This course introduces the fundamental concepts, research issues, and hands-on practices of software engineering. Topics include Introduction to Software Engineering, Software Products and Project Management: Software product management and prototyping, Agile Software Engineering: Agile methods, Scrum, and Extreme Programming, Features, Scenarios, and Stories, Software Architecture: Architectural design, System decomposition, and Distribution architecture, Cloud-Based Software: Virtualization and containers, Everything as a service, Software as a service, Cloud Computing and Cloud Software Architecture, Microservices Architecture, RESTful services, Service deployment, Security and Privacy, Reliable Programming, Testing: Functional testing, Test automation, Test-driven development, and Code reviews, DevOps and Code Management: Code management and DevOps automation, and Case Study on Software Engineering.

學生核心能力關連(Student's Core Competence) :

(八大核心能力為百分比；合計100%；Total 100%)

財務金融英語碩士學位學程 110年 系核心能力：[±]

資訊管理研究所 110年 系核心能力：  
 資訊科技新知探索與系統開發應用 90 %  
 網路行銷企劃能力 0 %  
 論文寫作與獨立研究能力新知 10 %  
 [-]

智慧醫療管理英語碩士學位學程 110年 系核心能力：[±]

**校四大基本素養**  
**Four Fundamental Qualities**

專業 Professionalism		人際 Interpersonal Relationship		倫理 Ethics		國際觀 International Vision	
創意思考 與問題解 決 (Creative thinking and Problem- solving) 30 %	綜合統整 (Comprehensive Integration) 30 %	溝通協調 (Communication and Coordination) 10 %	團隊合作 (Teamwork) 10 %	誠信正直 (Honesty and Integrity) 5 %	尊重自省 (Self- Esteem and Self- reflection) 5 %	多元關懷 (Caring for Diversity) 5 %	跨界宏觀 (Interdisciplinary Vision) 5 %

商學院學習目標(College Learning Goals)：

Ethics/Corporate Social Responsibility  
 Global Knowledge/Awareness  
 Communication  
 Analytical and Critical Thinking

系所學習目標(Department Learning Goals)：

Information Technologies and System Development Capabilities  
 Research capabilities

教學進度(Teaching Contents)：

週別 (Weekly Schedule)	日期 (Date)	教學預定進度 (Tentative teaching schedule) (若有調整，依教師實際授課為準; Adjustments are made according to instructor's actual teaching schedule)	教學方法與教學活動 (Teaching methods and activities)
Week 1	20220223	Introduction to Software Engineering	講授Lecture 討論Discussion 實習Practicum
Week 2	20220302	Software Products and Project Management: Software product management and prototyping	講授Lecture 討論Discussion 實習Practicum
Week 3	20220309	Agile Software Engineering: Agile methods, Scrum, and Extreme Programming	講授Lecture 討論Discussion 實習Practicum
Week 4	20220316	Features, Scenarios, and Stories	講授Lecture 討論Discussion 實習Practicum
Week 5	20220323	Case Study on Software Engineering I	討論Discussion
Week 6	20220330	Software Architecture: Architectural design, System decomposition, and Distribution architecture	講授Lecture 討論Discussion 實習Practicum
Week 7	20220406	Make-up holiday for NTPU Anniversary & Sports Day (No Classes)	講授Lecture 討論Discussion 實習Practicum
Week 8	20220413	Midterm Project Report	討論Discussion

Week 9	20220420	Cloud-Based Software: Virtualization and containers, Everything as a service, Software as a service	講授Lecture 討論Discussion 實習Practicum
Week 10	20220427	Cloud Computing and Cloud Software Architecture	講授Lecture 討論Discussion 實習Practicum
Week 11	20220504	Microservices Architecture, RESTful services, Service deployment	討論Discussion
Week 12	20220511	Industry Practices of Software Engineering	討論Discussion
Week 13	20220518	Case Study on Software Engineering II	講授Lecture 討論Discussion 實習Practicum
Week 14	20220525	Security and Privacy; Reliable Programming; Testing: Functional testing, Test automation, Test-driven development, and Code reviews; DevOps and Code Management: Code management and DevOps automation	講授Lecture 討論Discussion 實習Practicum
Week 15	20220601	期末報告 I (Final Project Report I)	討論Discussion
Week 16	20220608	期末報告 II (Final Project Report II)	討論Discussion
Week 17	20220615	學生自主學習 (Self-learning)	其他Others
Week 18	20220622	學生自主學習 (Self-learning)	其他Others

評量方式(Evaluation Methods) :

課堂之前測(Pre-test) 0 %

課堂之隨堂測驗(Quiz) 0 %

期中考-筆試(Mid-Term) 0 %

期末考-筆試(Final Exam) 0 %

個案分析報告(Case Report) 10 %

課堂參與(Class Participation) 10 %

個人報告(Individual Presentation) 60 %

團體報告(Group Presentation) 10 %

作業(Assignment) 10 %

其他評量方式(Other Evaluation Methods)

指定用書(Required Texts) :

Ian Sommerville (2019), Engineering Software Products: An Introduction to Modern Software Engineering, Pearson.

參考書目(Reference Books) :

Ian Sommerville (2015), Software Engineering, 10th Edition, Pearson.

Titus Winters, Tom Manshreck, and Hyrum Wright (2020), Software Engineering at Google: Lessons Learned from Programming Over Time, O'Reilly Media.

其他參考資料(Other References) :

『請遵守智慧財產權』及『不得非法複製及影印』

Please respect intellectual property rights and do not illegally copy or print materials.