112 學年度 第 **2** 學期 **軟體工程** 課程大綱 結束 列印本頁

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2 ,智慧醫療管理英語碩士學位學程1 ,智慧醫療管理英語碩士學位學程2 ,英語授課商學碩士學分學程 ,電子商務碩士學分學程 , 城市治理英語碩士學位學程1 ,城市治理英語碩士學位學程2 ,**
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.

本課程包含永續發展(SDGs)目標(→點此瞭解永續相關目標←)：
SDG4｜優質教育 (Quality Education)
SDG8｜尊嚴就業與經濟發展 (Decent Work and Economic Growth)
SDG9｜產業創新與基礎設施 (Industry, Innovation and Infrastructure)
SDG12｜負責任的消費與生產 (Responsible Consumption and Production)

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 112年 系核心能力：
Communication: Each student will be able to demonstrate proficiency in oral and written communication. 10 %
Teamwork: Each student will demonstrate the ability to work well in teams. 10 %
Professionalism: Each student will have the ability to address and analyze business problems and provide suggestions to the related fields. 60 %
Business values: Each student will be aware of sustainable and ethical issues and their implications. 10 %
Global awareness: Each student will gain global awareness by participating in related activities. 10 %
[-]

資訊管理研究所 112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 112年 系核心能力：
透過跨領域的學習來培養學生創新思考並解決問題的素養。 10 %
訓練學生智慧醫療管理的專業素養 60 %
來自不同文化的學生在學習及討論的過程中，了解彼此的差異、尋求共識，建立溝通協調的能力。 5 %
藉由與不同國籍同學之間的合作培養團隊合作精神。 5 %
培養學生關注醫療、商業倫理素養 5 %
培養學生關注人工智慧議題的專業倫理素養 5 %
養成學生對於不同領域之議題之思辨力 5 %
培養跨領域專業人才以因應未來國際趨勢 5 %
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城市治理英語碩士學位學程 112年 系核心能力：
專業知識與跨域整合：培養學生掌握當代城市治理的專業知識，並進行跨域整合的能力 70 %
國際多元與團隊合作：培養國際觀與多元尊重，並掌握全球情勢脈動，以進行團隊合作 10 %
智慧永續與創新思維：培養學生具備資料分析與了解智慧科技的能力，
並應用創新思維於創意城市環境與地方創生的建構 10 %
政策制定與執行：培養同學思考公私部門永續發展議題，並以專業跨域整合思維，具備制定與執行政策的能力。 10 %
[-]

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	20240221	Introduction to Software Engineering	講授Lecture 討論Discussion 實習Practicum
Week 2	20240228	(Day Off)	
Week 3	20240306	Software Products and Project Management: Software product management and prototyping	講授Lecture 討論Discussion 實習Practicum
Week 4	20240313	Agile Software Engineering: Agile methods, Scrum, and Extreme Programming	講授Lecture 討論Discussion 實習Practicum
Week 5	20240320	Case Study on Software Engineering I	討論Discussion
Week 6	20240327	Features, Scenarios, and Stories	講授Lecture 討論Discussion 實習Practicum
Week 7	20240403	Make-up holiday for NTPU Sports Day (No Classes)	
Week 8	20240410	Midterm Project Report	討論Discussion
Week 9	20240417	Software Architecture: Architectural design, System decomposition, and Distribution architecture	講授Lecture 討論Discussion 實習Practicum
Week 10	20240424	Cloud-Based Software: Virtualization and containers, Everything as a service, Software as a service; Cloud Computing and Cloud Software Architecture	講授Lecture 討論Discussion 實習Practicum
Week 11	20240501	Case Study on Software Engineering II	討論Discussion
Week 12	20240508	Microservices Architecture, RESTful services, Service deployment	講授Lecture 討論Discussion 實習Practicum
Week 13	20240515	Industry Practices of Software Engineering	講授Lecture 討論Discussion 實習Practicum
Week 14	20240522	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	20240529	Final Project Report I	討論Discussion
Week 16	20240605	Final Project Report II	討論Discussion
Week 17&18：彈性補充教學		Self Study	

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 Exam) 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)：