

# 业务需求建模 教学大纲

## Business Requirements Modelling Subject Syllabus

### 一、课程信息 Subject Information

课程编号: Subject ID	3100213003	开课学期: Semester	3
课程分类: Category	专业教育 PA	所属课群: Section	工程能力 EA
课程学分: Credit Points	3.5	总学时/周: Total Hours/Weeks	56/16
理论学时: LECT. Hours	56	实验学时: EXP. Hours	0
PBL 学时: PBL Hours	0	实践学时/周: PRAC. Hours/Weeks	0
开课学院: College	东北大学 悉尼智能科技学院 Sydney Smart Technology College Northeastern University	适用专业: Stream	计算机科学与技术 CST
课程属性: Pattern	必修 Compulsory	课程模式: Mode	引进 UTS
中方课程协调人: NEU Coordinator	范宽 Kuan Fan	成绩记载方式: Result Type	百分制 Marks
先修课程: Requisites	C 程序设计基础 Fundamentals of C Programming		
英文参考教材: EN Textbooks	IIBA (2015), A Guide to the Business Analysis Body of Knowledge, BABOK (any version).		
中文参考教材: CN Textbooks	掌握需求过程 第三版 Suzanne Robertson James Robertson 人民邮电出版社		
教学资源: Resources	<a href="https://lms.cloudcampus.com.cn/courses/16">https://lms.cloudcampus.com.cn/courses/16</a>		
课程负责人(撰写人): Subject Director	范宽 Kuan Fan	提交日期: Submitted Date	8/27/2023
任课教师(含负责人): Taught by	Dr. Mukesh Prasad、 Associate Prof. Asif Gill、 Dr. Mahira Mohamed Mowjoon、 Dr. Muhammad Atif Qureshi、 范宽、 刘立卿 Kuan Fan、 Liqing Liu		
审核人: Checked by	韩鹏	批准人: Approved by	史闻博
		批准日期: Approved Date	单击或点击此处输入日期。

## 二、教学目标 Subject Learning Objectives (SLOs)

注：毕业要求及指标点可参照悉尼学院本科生培养方案，可根据实际情况增减行数

Note: GA and index can be referred from undergraduate program in SSTC website. Please add/reduce lines based on subject.

<p>整体目标: Overall Objective</p>	<p>培养学生社会责任感。学生定位、解释和分析利益相关者的文化背景和需求，确定优先事件和目标，并识别限制、不确定因素和风险（来自于社会、道德、文化、立法、环境、经济等），基于此来定义系统要求。培养学生建模能力。针对特定需求，学生能够提出问题、设计并给出决策方法来开发组件、系统等以解决问题。培养学生合作和沟通能力。学生作为不同团队的有效成员或者领导者，能够进行跨学科和跨文化环境的工作环境中进行有效的沟通。</p> <p>Cultivate students' sense of social responsibility. The students identify, engage, interpret and analyze stakeholder needs and cultural perspectives, establish priorities and goals, and identify constraints, uncertainties and risks (social, ethical, cultural, legislative, environmental, economics etc.) to define the system requirements. Cultivate students' modeling ability. The students apply problem solving, design and decision-making methodologies to develop components, systems and processes to meet specified requirements. Cultivate students' ability to collaborate and communicate. The students work as an effective member or leader of diverse teams, communicating effectively and operating within cross-disciplinary and cross-cultural contexts in the workplace.</p>	
<p>(1) 专业目标: Professional Ability</p>	<p>1-1</p>	<p>正确定位利益相关者，了解他们的需求，在系统开发过程中获取其相关需求</p> <p>Identify stakeholders, understand their needs, and learn what/how to capture requirements in the system development process.</p>
	<p>1-2</p>	<p>确定并应用有助于理解业务系统工作流程的建模和分析技术工具</p> <p>Apply modelling and systems analysis techniques that help understand the working of a business system</p>
	<p>1-3</p>	<p>通过软件需求规范 (SRS) 记录各种需求</p> <p>Document and specify various requirements via Software Requirements Specification (SRS)</p>
	<p>1-4</p>	<p>使用多种系统分析技术构建各种模型用以分析指定系统和用户需求。</p> <p>Develop various models using a range of systems analysis techniques to analyze and specify system and user requirements.</p>
<p>(2) 德育目标: Essential Quality</p>	<p>2-1</p>	<p>培养具有不畏困难、不惧失败、锲而不舍、敢于尝试、迎难而上的精神，并在学习过程中培养自己的细心和耐心的勇气和精神</p> <p>Cultivate the spirit of not fearing difficulties or failure, perseverance, daring to try, and cultivate their own careful and patient courage and spirit in the process of learning</p>

	2-2	培养团队精神，具有合作意识。 Cultivate team spirit and have a sense of cooperation.
	2-3	理解业务需求建模教育对提高自主创新能力，建设创新型国家的重要意义。 Understand the significant meanings of engineering communication education in improving the ability of independent innovation and building an innovation-oriented country.
	2-4	了解主要矛盾和次要矛盾，在面对复杂问题的时候要实事求是、抓住主要矛盾 Understand the main contradiction and secondary contradiction, seek truth from facts and grasp the main contradiction in the face of complex problems
	2-5	培养工程思维，理解建模意义 Cultivate engineering thinking and understand the meaning of modeling
	2-6	了解业务需求建模对于社会经济发展、区域安全的重要意义 Be aware of the significant meanings of BRM in society development and district security

**课程教学目标与毕业要求的对应关系 Matrix of GA & SLOs**

毕业要求 GA	指标点 GA Index	教学目标 SLOs
<p>2、问题分析：能够应用数学、自然科学和工程科学的基本原理、方法和手段，识别、表达、并通过文献研究分析复杂工程问题，以获得有效结论。</p> <p><b>2. Problem Analysis</b> Identify, formulate, research literature and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.</p>	<p>2-1: 能够应用数学、自然科学和工程科学的基本原理、方法和手段，分析、识别、表达本专业相关的复杂工程问题；</p> <p>2-1: Capable of analyzing, identifying and formulating the major-related complex engineering problems using the basic principle of mathematics, natural sciences and engineering sciences;</p>	<p>1-1, 1-2, 2-1, 2-2, 2-3</p>
	<p>2-2: 能够应用数学、自然科学和工程科学的基本原理、方法和手段，针对实际复杂工程问题设计针对性的技术方案，并综合运用文献、科学理论和技术手段予以解决。</p> <p>2-2: Capable of designing specific technical solutions for complex practical engineering problems using the basic principle of mathematics, natural sciences and engineering sciences, and solving the problem by academic literature, scientific theory and techniques.</p>	

<p><b>3、设计/开发解决方案：</b>能够设计针对复杂实际问题的解决方案，设计满足特定需求的系统、单元或流程，并能够在设计环节中体现创新意识，考虑社会、健康、安全、法律、文化以及环境等因素。</p> <p><b>3. Design/Development of Solutions:</b> Design solutions for complex practical problems and design systems, components or processes that meet specified needs with appropriate consideration for public health, and safety, cultural, societal and environmental considerations.</p>	<p>3-1: 能够设计针对本专业相关复杂实际问题的解决方案; 3-1: Capable of designing solutions to complex practical problems related to this major;</p> <p>3-2: 能够对不同设计方案进行比较和优化, 在工作各环节中具有创新意识和批判意识, 善于发现、分析、系统表述和解决实际问题。 3-2: Capable of comparing and optimizing different design schemes, having a sense of innovation and criticism in all aspects of work, and be good at discovering, analyzing, systematically elaborating and solving practical problems.</p> <p>3-3: 能够在设计和开发的各个环节中综合考虑社会、健康、安全、法律、文化以及环境等因素。 3-2: Capable of comparing and optimizing different design schemes, having a sense of innovation and criticism in all aspects of work, and be good at discovering, analyzing, systematically elaborating and solving practical problems.</p>	<p>1-1, 1-3, 1-4, 2-3, 2-4, 2-5</p>
<p><b>4、研究：</b>能够基于科学原理并采用科学方法对复杂实际问题进行研究，包括设计实验、分析与解释数据、并通过信息综合得到合理有效的结论。</p> <p><b>4. Investigation:</b> Conduct investigations of complex problems using research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions.</p>	<p>4-1: 能够基于科学原理并采用科学方法, 在本专业相关理论指导下对复杂实际问题设计实验进行研究; 4-1: Capable of design experiments on complex problems with scientific knowledge and research methods of this major;</p> <p>4-2: 能够结合本专业对实验数据进行分析与解释, 设计并优化实验方案, 并通过信息综合得到合理有效的结论。 4-2: Capable of analyzing and interpreting the experimental data, designing and optimizing the experimental schemes with the knowledge of this major; reasonable and effective conclusions are obtained through information synthesis.</p>	<p>1-2, 1-3, 2-4, 2-5, 2-6</p>
<p><b>5、使用现代工具：</b>能够针对复</p>	<p>5-1: 能够对本专业相关复杂工程问题</p>	<p>1-3, 1-4, 2-1,</p>

<p>杂实际问题，开发、选择与使用恰当的技术、资源、现代信息技术工具，包括对复杂实际问题的预测与模拟，并能够理解其局限性。</p> <p><b>5. Modern Tool Usage:</b> Create, select and apply appropriate techniques, resources and modern engineering and IT tools, including prediction and modeling, to complex practical problems, with an understanding of the limitations.</p>	<p>进行建模与分析，理解获取相关信息参数的必要性与基本方法，并理解其局限性；</p> <p>5-1: Capable of modeling and analyzing complex engineering problems related to the major, understanding the necessity and basic methods of obtaining relevant information parameters, and their limitations;</p>	<p>2-3, 2-5</p>
	<p>5-2 熟悉解决本专业相关复杂实际问题所需的技术和资源，能够运用现代信息技术进行文献检索和资料查询，获取专业解决方案</p> <p>5-2: Familiar with the technology and resources required to solve complex practical problems related to the major, capable of using modern information technology to conduct document retrieval and data query, and obtaining professional solutions.</p>	<p>1-2, 1-3, 1-4, 2-5, 2-6</p>
<p><b>6、工程与社会：</b>能够基于本专业相关背景知识和相关法规标准进行合理分析，评价本专业工程实践和复杂工程问题解决方案对社会、健康、安全、法律以及文化的影响，并理解应承担的责任。</p> <p><b>6. The Engineer and Society:</b> Apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice and solutions to complex engineering problems.</p>	<p>指标点 6-1：能够基于本专业相关背景知识进行合理分析，评价计算机相关工程实践和复杂工程问题解决方案对社会、健康、安全、法律以及文化的影响；</p> <p>6-1: Capable of analyzing and evaluating the social, health, safety, legal and cultural impact of computer-related engineering practices and complex engineering problem solutions based on the relevant background knowledge of the major;</p>	<p>1-3, 1-4, 2-1, 2-2, 2-3</p>
	<p>指标点 6-2：理解本专业工程实践和相关行业工程问题解决方案对社会、健康、安全、法律以及文化应承担的责任。6-2: Understanding of the social, health, safety, legal, and cultural responsibilities of engineering practices and solutions to engineering problems in the relevant industry.</p>	
<p><b>7、环境与可持续发展：</b>能够理解和评价针对本专业相关复杂工程问题的工程实践对环境、社会可持续发展的影响。</p>	<p>7-1：了解本专业相关的环境与可持续发展方针政策和法律法规，理解工程实践中所应承担的责任。</p> <p>7-1: Understanding of the relevant</p>	<p>1-1, 1-2, 2-1, 2-2</p>

<p><b>7. Environment and Sustainability:</b> Understand and evaluate the sustainability and impact of professional engineering work in the solution of complex engineering problems in societal and environmental contexts.</p>	<p>environmental and sustainable development policies, laws and regulations related to the major, and understanding of the responsibilities that should be taken in engineering practice.</p>	
<p><b>9、个人与团队:</b> 能够在多学科背景下的团队中承担个体、团队成员以及负责人的角色。 <b>9. Individual and Teamwork:</b> Function effectively as an individual, and as a member or leader in diverse teams and in multi-disciplinary settings.</p>	<p>指标点 9-1: 能够认识团队协作的重要性, 具有强烈的团队协作意识和能力、卓越的组织管理能力、较强的表达能力和人际交往能力。 9-1: Recognition of the importance of teamwork, a strong sense and capability of teamwork, excellent organization and management skills, outstanding expression and interpersonal skills.</p>	<p>1-3, 1-4, 2-4, 2-5</p>
<p><b>10、沟通:</b> 能够就本专业复杂工程问题与业界同行及社会公众进行有效沟通和交流, 包括撰写报告和设计文稿、陈述发言、清晰表达或回应指令。具备一定的国际视野, 能够在跨文化背景下进行沟通和交流。 <b>10. Communication:</b> Communicate effectively on complex engineering activities with the engineering community and society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations and give and receive clear instructions. Be able to communicate in a cross-cultural context with an International vision.</p>	<p>指标点 10-1: 能够就计算机领域相关复杂工程问题与业界同行及社会公众进行有效沟通和交流, 能够通过口头或书面方式实现有效表达。 10-1: Capable of effectively communicating and communicating with industry peers and the public on complex practical issues related to the computer sciences, and effective expression through oral or written forms.</p>	<p>1-1, 1-3, 2-1, 2-2</p>
<p><b>11、项目管理与财务:</b> 理解并掌握工程管理原理与经济决策方法, 并能在多学科环境中应用。 <b>11. Project Management and Finance:</b> Demonstrate knowledge and understanding of engineering management principles and</p>	<p>指标点 11-1: 掌握基本的工程管理原理和经济决策方法, 能对计算机相关领域的新技术、新应用进行技术分析和比较; 11-1: Master of basic engineering management principles and economic decision-making methods, and capable</p>	<p>1-1, 1-4, 2-5, 2-6</p>

economic decision-making and apply these to one's own work as a member and leader in a team, to manage projects and in multi-disciplinary environments.	of analyzing and comparing new technology and applications in computer-related fields;	
	指标点 11-2: 具有良好的组织、管理和领导能力, 能够将本专业相关工程管理原理与经济决策方法应用于多学科环境中。 11-2: Good skills on organization, management and leadership, and Capable of applying relevant engineering management principles and economic decision-making methods in the multidisciplinary environment.	

### 三、教学内容 Content (Topics)

注: 以中英文填写, 各部分内容的表格可根据实际知识单元数量进行复制、扩展或缩减

Note: Filled in both CN and EN, extend or reduce based on the actual numbers of knowledge unit

#### (1) 理论教学 Lecture

知识单元序号: Knowledge Unit No.	1	支撑教学目标: SLOs Supported	1-1、2-6
知识单元名称 Unit Title	业务需求建模课程介绍 Subject Outline and Introduction to Business Requirements Modelling(BRM)		
知识点: Knowledge Delivery	理解业务需求建模所涉及的内容 Understand what is involved in the subject Business Requirements Modelling (BRM)		
	理解业务需求所需角色 Understand the role of a Business Analyst (BA)		
学习目标: Learning Objectives	了解: Recognize	业务需求场景 Business requirement scenario	
	理解: Understand	业务需求 What is Business Analysis	
		业务需求建模 What is Business Requirements Modelling (BRM)	
德育目标 Moral Objectives	了解业务需求建模对于社会经济发展、区域安全的重要意义 Be aware of the significant meanings of BRM in society development and district security		
重点: Key Points	定义利益相关者 Who are Stakeholders		

	定义需求 What are Requirements
	定义业务需求建模 What is Business Requirements Modelling
难点: Focal Points	找到利益相关者 Who are Stakeholders

知识单元序号: Knowledge Unit No.	2	支撑教学目标: SLOs Supported	1-1、2-3
知识单元名称 Unit Title	需求过程 Requirements Process		
知识点: Knowledge Delivery	系统开发过程 System Development Process		
	需求过程 Requirements Process		
	相关利益人员分析 Stakeholders Analysis		
学习目标: Learning Objectives	了解: Recognize	了解需求过程的阶段以及每个阶段过程中的任务 Understand the stages/phases of a Requirements Process and activities and tasks within each stage/phase	
	理解: Understand	理解系统开发过程中的“需求过程” Understand “Requirements Process” within the system development process	
	掌握: Master	理解如何定义相关利益人员 Identify Stakeholders and understand who they are	
德育目标 Moral Objectives	理解业务需求建模教育对提高自主创新能力，建设创新型国家的重要意义。 Understand the significant meanings of engineering communication education in improving the ability of independent innovation and building an innovation-oriented country.		
重点: Key Points	敏捷开发过程 Agile System Development Process		
	需求过程 Requirements Process		
难点: Focal Points	不同利益相关者之间的区别 Why are there differences between stakeholders		

知识单元序号: Knowledge Unit No.	3	支撑教学目标: SLOs Supported	1-2、2-4
知识单元名称 Unit Title	需求启发 Requirements Elicitation		
知识点:	需求启发过程		



Knowledge Delivery	Requirements Elicitation Process	
	需求启发工具 Requirements Elicitation Techniques	
学习目标: Learning Objectives	了解: Recognize	了解系统升级前后的业务需求差异 Understand the differences between requirements elicitation for existing systems vs the new system
	理解: Understand	为特定的系统选择合适的需求启发工具 Identify appropriate technique for eliciting requirements for a given system and situation
	掌握: Master	从利益相关者或其他资源获得业务需求 Plan for and carry out elicitation of requirements from stakeholders and other sources
掌握不同需求启发工具的优缺点 Understand the benefits and drawbacks of different elicitation techniques		
德育目标 Moral Objectives	了解主要矛盾和次要矛盾，在面对复杂问题的时候要实事求是、抓住主要矛盾 Understand the main contradiction and secondary contradiction, seek truth from facts and grasp the main contradiction in the face of complex problems	
重点: Key Points	Requirements Elicitation Process 需求启发过程	
难点: Focal Points	需求启发工具 Techniques for eliciting requirements	

知识单元序号: Knowledge Unit No.	4	支撑教学目标: SLOs Supported	1-1、1-2、2-5
知识单元名称 Unit Title	需求分析——过程建模 Requirements Analysis - Business Process Modelling		
知识点: Knowledge Delivery	业务流程 Business Processes		
	业务流程建模 Business Process Modelling		
	业务流程建模工具 BPMN BPMN – A Process Modelling Technique		

学习目标: Learning Objectives	了解: Recognize	建模对业务系统的重要性 Appreciate how modelling techniques can help to understand the working of business systems.
	理解: Understand	针对特定系统和用户需求的建模要求 Discover how modelling can be used to specify system and user requirements.
	掌握: Masters	使用 BPM 建模, 理解建模后的系统业务流程, 并给 予分析 Discover how Business Process Model (BPM) can be used to model, analyze and understand the business processes in an organization.
德育目标 Moral Objectives	培养工程思维, 理解建模意义 Cultivate engineering thinking and understand the meaning of modeling	
重点: Key Points	需求分析与建模 Requirements Analysis & Modelling	
难点: Focal Points	使用 BPMN 进行业务过程建模 Business Process Modelling using BPMN	

知识单元序号: Knowledge Unit No.	5	支撑教学目标: SLOs Supported	1-1、1-2、2-4
知识单元名称 Unit Title	需求分析-数据建模 Requirements Analysis - Data Modelling		
知识点: Knowledge Delivery	数据建模 Data Modelling		
	实体关系图(ERD) Entity Relationship Diagram (ERD)		
学习目标: Learning Objectives	了解: Recognize	建模对业务系统的重要性 Appreciate how modelling techniques can help understand the working of business systems	
	理解: Understand	针对特定系统和用户需求的建模要求 Discover how modelling can be used to specify system and user requirements	
	掌握: Master	使用 ERD 建模, 理解建模后的系统业务流程, 并给 予分析 Discover how Entity Relationship Diagram (ERD) can be used to model, analyse and understand the data requirements of an organisation	
德育目标 Moral Objectives	了解主要矛盾和次要矛盾, 在面对复杂问题的时候要实事求是、抓 住主要矛盾 Understand the main contradiction and secondary contradiction, seek		

	truth from facts and grasp the main contradiction in the face of complex problems
重点: Key Points	需求分析与建模 Requirements Analysis & Modelling
难点: Focal Points	ERD 数据建模 Data Modelling using ERD

知识单元序号: Knowledge Unit No.	6	支撑教学目标: SLOs Supported	1-2、1-3、2-3
知识单元名称 Unit Title	软件需求规范 (SRS) 和敏捷开发 Software Requirement Specification (SRS) and Agile Development		
知识点: Knowledge Delivery	软件需求规范 (SRS) Software Requirement Specification (SRS) 敏捷开发 Agile Development		
学习目标: Learning Objectives	了解: Recognize	评估用户故事以及优先级 Understand how user stories are estimated and prioritized	
	理解: Understand	根据用户故事发现软件需求 Discover how user stories can be used to specify software requirements	
	掌握: Master	敏捷和传统软件需求规范 (IEEE SRS) 之间的区别 Understand the difference between agile and traditional software requirement specification (IEEE SRS).	
德育目标 Moral Objectives	理解业务需求建模教育对提高自主创新能力，建设创新型国家的重要意义。 Understand the significant meanings of engineering communication education in improving the ability of independent innovation and building an innovation-oriented country.		
重点 Key Points	软件需求规范内容和结构 SRS content and structure		
	传统软件需求规范与用户故事（敏捷方法） Traditional IEEE SRS vs User Stories (Agile approach)		
难点: Focal Points	软件需求规范 (SRS) Software Requirements Specification (SRS)		

知识单元序号: Knowledge Unit No.	7	支撑教学目标: SLOs Supported	1-2 到 1-4、2-1
知识单元名称 Unit Title	敏捷开发与用户故事 Agile Development and User Stories		
知识点: Knowledge Delivery	用户故事（目的、指南、验收测试、评估、优先级、工作量估算、重要性） User stories(Purpose、Guidelines、Acceptance Tests、Estimation、		

	Prioritisation、 Estimation of effort、 Importance)	
	基于用户故事的敏捷开发 Agile Development with User Stories	
学习目标: Learning Objectives	了解: Recognize	用户故事中的验收测试 Acceptance Tests in User Stories
	理解: Understand	评估用户故事及确定优先级 Understand how user stories are estimated and prioritised.
	掌握: Master	基于用户故事确定软件需求 Discover how user stories can be used to specify software requirements
德育目标 Moral Objectives	培养具有不畏困难、不惧失败、锲而不舍、敢于尝试、迎难而上的精神，并在学习过程中培养自己的细心和耐心的勇气和精神 Cultivate the spirit of not fearing difficulties or failure, perseverance, daring to try, and cultivate their own careful and patient courage and spirit in the process of learning	
重点: Key Points	传统建模方式与敏捷开发 Traditional approach VS. Agile Development	
	用户故事（目的、指南、验收测试、评估、优先级、工作量估算、重要性） User stories(Purpose、 Guidelines、 Acceptance Tests、 Estimation、 Prioritisation、 Estimation of effort、 Importance)	
难点: Focal Points	基于用户故事进行敏捷开发 Agile Development with User Stories	

知识单元序号: Knowledge Unit No.	8	支撑教学目标: SLOs Supported	1-2 到 1-4、 2-3
知识单元名称 Unit Title	基于 UML 的面向对象模型 - 用例建模 Object-Oriented Models with UML- Use Case Modelling		
知识点: Knowledge Delivery	结构化分析与面向对象分析 Structured Analysis and Object Oriented Analysis		
	统一建模语言(UML) Unified Modelling Language (UML)		
	用例建模 Use Case Modelling		
学习目标: Learning Objectives	了解: Recognize	面向对象 (OO) 建模对理解业务系统的作用 Appreciate how Object Oriented (OO) modelling techniques can help to understand the working of business systems	
	理解:	系统规范的重要性, 以及面向对象技术对特性系统和	

	Understand	用户需求建模 Discover why system specifications are important and how OO modeling can be used to specify systems and user requirements
	掌握: Master	使用面向对象分析技术进行用例建模 Use object-oriented system analysis techniques to develop a system model (Use Case Model)
德育目标 Moral Objectives		理解业务需求建模教育对提高自主创新能力，建设创新型国家的重要意义。 Understand the significant meanings of engineering communication education in improving the ability of independent innovation and building an innovation-oriented country.
重点: Key Points		结构化分析 Structured Analysis 面向对象分析 Object Oriented Analysis 统一建模语言(UML) Unified Modelling Language (UML)
难点: Focal Points		用例建模与描述 Use Case Modelling and Narrative

知识单元序号: Knowledge Unit No.	9	支撑教学目标: SLOs Supported	1-2 到 1-4、2-3
知识单元名称 Unit Title	基于 UML 的面向对象模型 – 类模型 Object-Oriented Models with UML – Class Modelling		
知识点: Knowledge Delivery	类图组件 Components of a Class Diagram 类之间的关系(关联、聚合、组成、泛化) Relationship between Classes(Associations 、 Aggregation 、 Composition、 Generalisations) 类图规则 Rules for Class Diagram		
学习目标: Learning Objectives	了解: Recognize	面向对象 (OO) 建模对理解业务系统的作用 Appreciate how Object Oriented (OO) modelling techniques can help to understand the working of business systems	
	理解: Understand	系统规范的重要性，以及面向对象技术对特性系统和用户需求建模 Discover why system specifications are important and how OO modeling can be used to specify systems and	

		user requirements
	掌握: Master	使用面向对象分析技术构建类图 Use object-oriented system analysis techniques to develop a system model (Class Diagram/Model)
德育目标 Moral Objectives		理解业务需求建模教育对提高自主创新能力，建设创新型国家的重要意义。 Understand the significant meanings of engineering communication education in improving the ability of independent innovation and building an innovation-oriented country.
重点: Key Points		类图组件 Components of a Class Diagram
		类之间的关系(关联、聚合、组成、泛化) Relationship between Classes(Associations、Aggregation、Composition、Generalisations)
难点: Focal Points		类图规则 Rules for Class Diagram

知识单元序号: Knowledge Unit No.	10	支撑教学目标: SLOs Supported	1-2 到 1-4、2-2
知识单元名称 Unit Title	基于 UML 的面向对象模型 – 基于时序图的交互模型 Object-Oriented Models with UML – Interaction Modelling		
知识点: Knowledge Delivery	时序图 Sequence diagram		
	交互模型 Interaction Modelling		
知识点: Knowledge Delivery	了解: Recognize	时序图的应用场景及分类 Interactive graph application scenarios and their classification	
	理解: Understand	类图和时序图之间的关系 Relationship between Class Diagram and Sequence Diagram	
	掌握: Master	基于时序图的交互模型 Interaction Modelling with Sequence Diagrams	
德育目标 Moral Objectives	培养团队精神，具有合作意识。 Cultivate team spirit and have a sense of cooperation.		
重点: Key Points	时序图的概念、目的、组件、消息 Notations、purpose、components、messages of sequence diagrams		
	类图和时序图之间的关系 Relationship between Class Diagram and Sequence Diagram		

难点: Focal Points	基于时序图的交互模型 Interaction Modelling with Sequence Diagrams
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知识单元序号: Knowledge Unit No.	11	支撑教学目标: SLOs Supported	1-2 到 1-4、2-1
知识单元名称 Unit Title	基于 UML 的面向对象模型 – 状态和事件模型 Object-Oriented Models with UML - State and Event Modelling		
知识点: Knowledge Delivery	类和对象 Classes and Objects		
	状态与事件模型 State and Event Modelling		
	使用状态转换图对状态和事件建模 State and Event Modelling with State Transition Diagrams		
	状态转换图的 UML 语法 UML Syntax for State Transition Diagram		
学习目标: Learning Objectives	了解: Recognize	状态和事件的定义 Understand the definition of states and events	
	理解: Understand	状态和事件模型（状态转换图） State and Event Modelling (State Transition Diagrams)	
	掌握: Master	使用 UML 建立状态转换图 UML Syntax for State Transition Diagram	
德育目标 Moral Objectives	培养具有不畏困难、不惧失败、锲而不舍、敢于尝试、迎难而上的精神，并在学习过程中培养自己的细心和耐心的勇气和精神 Cultivate the spirit of not fearing difficulties or failure, perseverance, daring to try, and cultivate their own careful and patient courage and spirit in the process of learning		
重点: Key Points 难点: Focal Points	状态与事件模型 State and Event Modelling		
	建立状态转换图		
	UML Syntax for State Transition Diagram		
	使用状态转换图构建状态和事件模型 State and Event Modelling with State Transition Diagrams 使用 UML		

#### 四、教学安排 Teaching Schedule

注：可根据实际情况增减行数

Note: Please add/reduce lines based on subject.

教学内容 Teaching Content	学时(周) Hour(Week)			
	理论 LECT.	实验 EXP.	课外实践 PBL	集中实践 PRAC.
业务需求建模课程介绍 Subject Outline and Introduction to BRM	4			
需求过程 Requirements Process	4			
需求启发 Requirements Elicitation	4			
需求分析——过程建模 Requirements Analysis - Business Process Modelling	4			
需求分析-数据建模 Requirements Analysis - Data Modelling	4			
软件需求规范 (SRS) 和敏捷开发 Software Requirement Specification (SRS) and Agile Development	6			
敏捷开发与用户故事 Agile Development and User Stories	6			
基于 UML 的面向对象模型 - 用例建模 Object-Oriented Models with UML- Use Case Modelling	6			
基于 UML 的面向对象模型 - 类模型 Object-Oriented Models with UML - Class Modelling	6			
基于 UML 的面向对象模型 - 交互模型 Object-Oriented Models with UML - Interaction Modelling	6			
基于 UML 的面向对象模型 - 类模型 Object-Oriented Models with UML - State and Event Modelling	6			
总计 Total	56			

## 五、教学方法 Teaching Methodology

注：可根据实际情况增减行数或修改内容

Note: Please add/reduce lines or revise content based on subject.

勾选 Check	教学方法与特色 Teaching Methodology & Characters
<input checked="" type="checkbox"/>	多媒体教学：基于信息化设备的课堂教学



	Multi-media-based lecturing
<input checked="" type="checkbox"/>	实践能力传授：理论与行业、实际案例相结合 Combining theory with industrial practical problems
<input checked="" type="checkbox"/>	课程思政建设：知识讲授与德育相结合 Knowledge delivery with ethic education
<input checked="" type="checkbox"/>	PBL 教学：问题驱动的分组学习与交流 Problem-based learning
<input type="checkbox"/>	其他:单击或点击此处输入文字。 Other:单击或点击此处输入文字。

## 六、成绩评定 Assessment

注：可根据实际情况增减行数或修改内容

Note: Please add/reduce lines or revise content based on subject.

考核环节: Assessment Content	平时 Behavior	环节负责人: Director	刘立卿、范宽 Liqing Liu、Kuan Fan
给分形式: Result Type	百分制 Marks	课程总成绩比重 (%): Percentage (%)	20%
考核方式: Measures	平时成绩按照课堂教师随机提问、平时课堂表现和出席综合评定 Behavior grades are evaluated by the teacher's questions, question performance and attendance.		

考核环节: Assessment Content	短测试 Short Quizzes	环节负责人: Director	刘立卿、范宽 Liqing Liu、Kuan Fan
给分形式: Result Type	百分制 Marks	课程总成绩比重(%): Percentage (%)	15%
考核方式: Measures	包括 10 个短测试，每个 10 分。 This assessment item includes 10 individual open-book short quizzes. Each quiz is worth 10%.		

考核环节: Assessment Content	需求分析报告 Requirements Analysis Report	环节负责人: Director	刘立卿、范宽 Liqing Liu、Kuan Fan
给分形式: Result Type	百分制 Marks	课程总成绩比重(%): Percentage (%)	20%
考核方式: Measures	每组最多 6 名学生，以组为单位根据案例给出需求分析报告，报告包括业务流程模型、数据模型和数据字典。报告字数最多 1000 字，不包括图表、参考文献和附录。		

	This assignment will require a group of maximum 6 students to assess the Case Study and for the group to produce a report containing Business Process Model, Data Model and Data Dictionary. The recommended word limit for this assignment is maximum 1000 words excluding diagrams, bibliography and appendices.
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考核环节: Assessment Content	面向对象需求分析报告 OO Requirements Analysis	环节负责人: Director	刘立卿、范宽 Liqing Liu、Kuan Fan
给分形式: Result Type	百分制 Marks	课程总成绩比重 (%): Percentage (%)	30%
考核方式: Measures	<p>每组最多 6 名学生，案例与 Requirements Analysis Report 相同，以组为单位完成一份面向对象需求分析报告，报告包括 UML 图表、基于用户故事与用例的功能性需求分析和基于 SRS 的非功能性需求分析。报告字数最多 3000 字，不包括图表、参考文献和附录。</p> <p>This assignment will require a group of maximum 6 students to assess the same case study as Assignment 1 (Requirements Analysis Report) and produce a report containing several UML diagrams, functional requirements using user stories and use cases, and non-functional requirements as parts of software requirement specifications. The recommended word limit for this assignment is maximum 3000 words excluding diagrams, bibliography and appendices.</p>		

考核环节: Assessment Content	小组答辩 Group presentation	环节负责人: Director	刘立卿、范宽 Liqing Liu、Kuan Fan
给分形式: Result Type	百分制 Marks	课程总成绩比重 (%): Percentage (%)	15%
考核方式: Measures	<p>每组成员根据给定方案和任务分工参加答辩，答辩过程中对所给出的解决方案、相关的 UML 模型和需求建模给予解释，同时建立面向对象和软件架构思想。学生在答辩过程中展示工程管理能力和对团队所作贡献。符合学术英语答辩原则。</p> <p>Each group member should participate in this presentation according to the group project contribution, to describe and explain by the solutions and related UML and requirement modelling, additionally student should have the sense of the OO design and software architecture. Furthermore, student should show the project management ability and teamwork distribution part in this presentation. All presentation should follow the academic English presentation principles.</p>		

## 七、改进机制 Improvement Mechanism

注：未尽事宜以教学团队以及学院教学指导委员会商定为准。

Note: Matters not covered in this file shall be determined by TAB of SSTC, NEU.

<b>教学大纲改进机制 Subject Syllabus Improvement Mechanism</b>			
考核周期(年): Check Period (YR)	4	修订周期(年): Revise Period (YR)	4
改进措施: Measures	<p>课程负责人根据课程教学内容与人才培养目标组织课程团队讨论并修改教学大纲，报分管教学工作副院长审核后由执行院长批准。</p> <p>The subject coordinator shall be responsible for the syllabus discussion and improvement, and the revised version shall be submitted to deputy dean (teaching affairs) for reviewing then to executive dean for approval</p>		
<b>成绩评定改进机制 Assessment Improvement Mechanism</b>			
考核周期(年): Check Period (YR)	1	修订周期(年): Revise Period (YR)	1
改进措施: Measures	<p>课程负责人根据课程教学内容、课堂教学效果以及成绩分布，对课程教学方法和成绩评定环节进行改进，并同步优化评定办法。</p> <p>The subject coordinator shall revise the syllabus based on the teaching content, effect and result distribution while optimize the assessment measures.</p>		