数据库原理 教学大纲

Principles of Database Subject Syllabus

一、课程信息 Subject Information

课程编号: Subject ID	3100213006	开课学期: Semester	4
课程分类: Category	专业教育 PA	所属课群: Section	专业基础 MF
课程学分: Credit Points	3	总学时/周: Total Hours/Weeks	48/4
理论学时: LECT. Hours	40	实验学时: EXP. Hours	8
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	互认 EQV
中方课程协调人: NEU Coordinator	敬茂华 JingMaohua	成绩记载方式: Result Type	百分制 Marks
先修课程: Requisites	离散数学 Discrete Mathematics		
英文参考教材: EN Textbooks	Silberschatz B A ,Korth H F , Sudarshan S . Database System Concepts (7th Edition). McGraw-Hill.		
中文参考教材: CN Textbooks	王珊,萨师煊.（2014）数据库系统概论（第 5 版）. Wang Shan, Sa Shixuan. (2014). Database System Concepts (5th Edition).Higher Education.		
教学资源: Resources	https://www.microsoft.com/zh-cn/sql-server/sql-server-2019		
课程负责人(撰写人): Subject Director	敬茂华 JingMaohua	提交日期: Submitted Date	单击或点击此处输入日期。
任课教师(含负责人): Taught by	敬茂华, 李佳音 Jing Maohua， Li Jiayin		
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.

整体目标: Overall Objective	本课程向学生介绍数据库系统的基本概念。学生们将学习如何在实际的应用系统中有效地构建、存储、组织和管理数据，以方便用户的应用。同时还学习如何使用 SQL 语言进行有效的数据检索和更改，针对具体的应用需求进行需求分析，数据库概念结构设计和逻辑结构设计。本课程教导学生认识到良好的数据库设计和管理的重要性和挑战，这是功能性软件应用程序开发的基础。 This subject introduces students to the fundamentals of effective database systems. Students are taught how data is structured and managed in an organization in a way that can be used effectively by applications and users. They also learn to use the language SQL for effective data retrieval and modification, according to the specific application requirements, learn how to study the requirement analysis, implementing database conceptual structure design and logical structure design. This subject teaches students to appreciate the significance and challenges of good database design and management, which underpin the development of functional software applications.	
（1）专业目标: Professional Ability	1-1	培养学生理解与结构化数据的设计和使用相关的主要问题；具有应用数据库设计原则构建概念模型和逻辑数据模型的抽象设计能力；评估数据冗余级别及其对数据库完整性和可维护性的影响。 Explain the main issues related to the design and use of structured data; Construct conceptual and logical data models applying database design principles; Evaluate data redundancy levels and their impact on database integrity and maintainability;
	1-2	应用数据建模原理构建概念数据模型；遵循数据规范化原则构建逻辑数据模型；区分好的和坏的数据库设计。 Construct conceptual data models applying data modelling principles;Construct logical data models adhering to data normalisation principles;Distinguish between good and bad database design;
	1-3	学习关系数据库标准语言 SQL；熟练掌握数据定义、数据查询、数据操纵和数据控制语句以及完整性约束，具备构造高效的 SQL 查询以根据需要检索和操作数据的能力；了解查询优化；学习嵌入式 SQL 和数据库编程。 Learn the standard language of relational database SQL；Master data definition, data query, data manipulation, data control statements and integrity constraints, and have the ability to construct efficient SQL queries to retrieve and manipulate data as required; Understandingquery planning &optimization;learn embedded SQL and database programming.

	1-4	学习事务的基本概念及 ACID 特性；理解数据库恢复技术；理解并发控制。 Learn transaction processing and its ACID properties;Understand database recovery technology; Understanding concurrency controltheory.
（2）德育目标: Essential Quality	2-1	理解数据库技术的研究学习对提高自主创新能力，建设创新型国家的重要意义。 Understand the research and learning of database technology in improving the ability of independent innovation and building an innovation-oriented country.
	2-2	认知提升信息技术人才的创新创业能力、构建产学合作的教育网络提高中国在全球发展核心竞争力。 Enhance the innovation and entrepreneurship ability of IT talents and construct the education network of industry-university cooperation to improve the core competitiveness of China in the global development.

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
1、工程知识：能够将数学、自然科学、工程基础和专业知识用于解决复杂工程问题。 **Engineering Knowledge**: Apply knowledge of mathematics, natural science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.	指标点 1-3：了解本专业涉及相关行业的发展趋势以及相关产业的运营模式，具备在本专业相关领域进行关系型数据库设计的能力。 Understanding of the development trend and operation mode of related industries, and capable of carrying out engineering design and technical innovation in related fields of this major.	1-1，1-2，1-3，1-4，2-1，2-2
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。 **2. Problem Analysis:** Identify, formulate, research literature and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.	指标点 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； Capable of analyzing, identifying and formulating the major-related complex engineering problems using the basic principle of mathematics, natural sciences and engineering sciences;	1-2，1-3，1-4,2-1
3、设计/开发解决方案：能	指标点 3-1：能够设计针对本专业相关复	1-2,1-3,1-4，2-1，

够设计针对复杂工程问题的解决方案，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。 **Design/Development of Solutions:** Design solutions for complex engineering problems and design systems, components or processes that meet specified needs with appropriate consideration for public health, and safety, cultural, societal, and environmental considerations.	杂工程问题的解决方案，能够设计和开发实现特定功能、满足特定需求的计算机、软件或网络系统； Capable of designing solutions to complex engineering problems related to the major, and capable of designing and developing computers, software or network systems that can function specifically and meet specific requirements. 指标点 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。 Capable of comparing and optimizing different design schemes, and innovative in all aspects of the work.	2-2
5、使用现代工具：能够针对复杂工程问题，开发、选择与使用恰当的技术、资源、现代工程工具和信息技术工具，包括对复杂工程问题的预测与模拟，并能够理解其局限性。 **Modern Tool Usage**: Create, select and apply appropriate techniques, resources and modern engineering and IT tools, including prediction and modeling, to complex engineering problems, with an understanding of the limitations.	指标点 5-1：能够对本专业相关复杂工程问题进行建模与分析，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； 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. 指标点 5-2：熟悉解决本专业相关复杂工程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； 5-2: Familiar with the technology and resources needed to solve complex engineering problems related to this major, and be able to use modern information technology for literature retrieval and data query to obtain professional solutions.	1-3，1-4，2-1

	指标点 5-3：能够针对本专业相关复杂工程问题，选择与使用恰当的技术、资源、现代工程工具和信息技术工具。 5-3: Capable of selecting and using appropriate technology, resources, modern engineering tools and information technology tools to solve complex engineering problems related to the major.	

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	1-1,1-2,1-3,1-4
知识单元名称 Unit Title	绪论 Introduction			
知识点: Knowledge Delivery	数据库系统应用: Database system applications 数据库系统的目的:Purpose of database systems 数据:View of data 数据库语言:Database languages			
	数据库设计:Database design 数据库和应用程序体系结构:Database and application architecture 数据库用户和管理员:Database users and administrators			
	数据库系统的历史 History of database systems			
学习目标: Learning Objectives	了解: Recognize	数据库系统的历史 History of database systems		
	理解: Understand	数据库系统应用,数据库系统的目的,数据库语言 History of database systems; Purpose of database systems; Database languages		
	掌握: Master	数据库设计,数据库和应用程序体系结构,数据库用户和管理员, Database design; Database and application architecture; Database users and administrators		
德育目标 Moral Objectives	2-1,2-2			
重点: Key Points	数据库设计,数据库和应用程序体系结构,数据库用户和管理员; Database design; Database and application architecture; Database users			

	and administrators
难点: Focal points	数据库和应用程序体系结构 Database and application architecture

知识单元序号: Knowledge Unit No.	2	支撑教学目标: SLOs Supported	1-1,1-2
知识单元名称 Unit Title	关系模型简介 Introduction to the relational model		
知识点: Knowledge Delivery	关系数据库结构：Structure of relational database 数据库模式；Database schema 码；Keys		
	关系查询语言；Relational query language 关系代数 The relational algebra		
学习目标: Learning Objectives	了解: Recognize	关系数据库结构 Structure of relational database	
	理解: Understand	数据库模式，关系查询语言 Database schema, relational query language	
	掌握: Master	关系代数 The relational algebra	
德育目标 Moral Objectives	2-1,2-2		
重点: Key Points	数据库模式；关系代数 Database schema; The relational algebra		
难点: Focal points	关系代数 The relational algebra		

知识单元序号: Knowledge Unit No.	3	支撑教学目标: SLOs Supported	1-1，1-3，
知识单元名称 Unit Title	SQL 语言基础 Introduction to SQL		
知识点: Knowledge Delivery	SQL 概述：Overview of the SQL query language SQL 数据定义：SQL data definition SQL 查询语句语法结构：Basic structure of SQL queries 附加基本操作：Additional basic operations		
	集合操作：Set operations 空值：Nullvalues 聚集函数：Aggregatefunctions		
	嵌套子查询：Nestedsubqueries		
学习目标: Learning Objectives	了解: Recognize	SQL 概述 Overview of the SQL query language	
	理解: Understand	SQL 数据定义 SQL data definition	
	掌握: Master	SQL 查询语句语法结构：Basic structure of SQL queries 附加基本操作：Additional basic operations 集合操作：Set operations 空值：Nullvalues	

		聚集函数：Aggregatefunctions 嵌套子查询：Nestedsubqueries
德育目标 Moral Objectives	2-1,2-2	
重点: Key Points	SQL 查询语句语法结构，附加基本操作，集合操作，空值，聚集函数，嵌套子查询 Basic structure of SQL queries; Additional basic operations; Set operations;Nullvalues; Aggregatefunctions; Nestedsubqueries	
难点: Focal points	嵌套子查询 Nestedsubqueries	

知识单元序号: Knowledge Unit No.	4	支撑教学目标: SLOs Supported	1-2，1-3
知识单元名称 Unit Title	中级及高级 SQL 语言 Intermediate SQL andadvanced SQL		
知识点: Knowledge Delivery	联接:Join expressions 视图:Views 完整性约束:Integrity constraints SQL 数据类型和模式:SQL Data Types and Schemas		
	定义索引: Index definition in SQL		
	触发器: Triggers 函数和过程: Functions and procedures		
学习目标: Learning Objectives	了解: Recognize	触发器,函数和过程 Triggers; Functions and procedures	
	理解: Understand	完整性约束, SQL 数据类型和模式 Integrity constraints; SQL Data Types and Schemas	
	掌握: Master	联接,视图,定义索引 Join expressions; Views; Index definition in SQL	
德育目标 Moral Objectives	2-1,2-2		
重点: Key Points	联接,视图,定义索引 Join expressions; Views; Index definition in SQL		
难点: Focal points	触发器,函数和过程 Triggers; Functions and procedures		

知识单元序号: Knowledge Unit No.	5	支撑教学目标: SLOs Supported	1-1,1-2
知识单元名称 Unit Title	数据库设计 Database design		
知识点: Knowledge Delivery	数据库设计过程 Database design process 数据字典 Data dictionary 数据流图 Data flow diagram		

	运用 E-R 模型进行数据库概念结构设计 Databasedesign using the E-R model	
	将 E-R 模型转换为关系模式 Reducing E-R diagramstorelationalschemas	
学习目标: Learning Objectives	了解: Recognize	复杂属性 Complex attributes 扩展的 E-R 模型 Extended E-R features
	理解: Understand	删除实体集中的冗余属性 Removing Redundant Attributes in EntitySets
	掌握: Master	运用 E-R 模型进行数据库概念结构设计 Databasedesign using the E-R model 将 E-R 模型转换为关系模式 Reducing E-R diagramstorelationalschemas
德育目标 Moral Objectives	2-1,2-2	
重点: Key Points	运用 E-R 模型进行数据库概念结构设计 Databasedesign using the E-R model 将 E-R 模型转换为关系模式 Reducing E-R diagramstorelationalschemas	
难点: Focal points	运用 E-R 模型进行数据库概念结构设计，将 E-R 模型转换为关系模式 Databasedesign using the E-R model ; Reducing E-R diagramstorelationalschemas	

知识单元序号: Knowledge Unit No.	6	支撑教学目标: SLOs Supported	1-2，1-3
知识单元名称 Unit Title	关系数据设计理论 Relational database design theory		
知识点: Knowledge Delivery	良好关系设计的特点: Features of good relational designs		
	函数依赖: Functional-dependency theory 使用函数依赖关系进行分解: Decomposition using functional dependencies		
	范式:Normal forms 第一范式到 BC 范式: 1NF, 2NF, 3NF, BCNF 使用函数依赖关系的分解算法: Algorithms for decomposition using functional dependencies		
学习目标: Learning Objectives	了解: Recognize	多值依赖,4NF, 5NF Multivalued Dependencies; 4NF, 5NF	
	理解: Understand	良好关系设计的特点: Features of good relational designs	

	掌握: Master	使用函数依赖关系进行分解: Decomposition using functional dependencies 范式:Normal forms
德育目标 Moral Objectives	2-1,2-2	
重点: Key Points	函数依赖:Functional-dependency theory 使用函数依赖关系的分解算法 Algorithms for decomposition using functional dependencies 第一范式到 BC 范式 1NF, 2NF, 3NF, BCNF	
难点: Focal points	函数依赖:Functional-dependency theory 使用函数依赖关系的分解算法 Algorithms for decomposition using functional dependencies	

知识单元序号: Knowledge Unit No.	7	支撑教学目标: SLOs Supported	1-1，1-4
知识单元名称 Unit Title	事务处理 Transactionsprocessing		
知识点: Knowledge Delivery	事务的概念:Transaction concept 一个简单的事务模型:A simple transaction model 事务的原子性和持久性:Transaction atomicity and durability		
	事务的隔离性:Transaction isolation 可串行化:Serializability 事务隔离与原子性:Transaction isolation and atomicity 事务隔离级别:Transaction isolation levels		
学习目标: Learning Objectives	了解: Recognize	事务隔离级别 Transaction Isolation Levels	
	理解: Understand	事务的概念 Transaction concept	
	掌握: Master	事务的原子性和持久性 Transaction atomicity and durability 事务的隔离性:Transaction isolation 可串行化:Serializability	
德育目标 Moral Objectives	2-1,2-2		
重点: Key Points	事务的原子性和持久性:Transaction atomicity and durability 事务的隔离性:Transaction isolation 可串行化:Serializability		
难点: Focal points	可串行化:Serializability		

知识单元序号: Knowledge Unit No.	8	支撑教学目标: SLOs Supported	1-1，1-4
知识单元名称 Unit Title	并发控制 Concurrency control		

知识点: Knowledge Delivery	基本锁的协议:Lock-based protocols 死锁:Deadlock handling 多粒度:Multiple granularity	
	插入操作、删除操作和谓词读取: Insert operations, delete operations, and predicate reads 时间戳协议:Timestamp-based protocols	
学习目标: Learning Objectives	了解: Recognize	基本锁的协议:Lock-based protocols
	理解: Understand	插入操作、删除操作和谓词读取: Insert operations, delete operations, and predicate reads 时间戳协议:Timestamp-based protocols
	掌握: Master	基本锁的协议:Lock-based protocols 死锁:Deadlock handling 多粒度:Multiple granularity
德育目标 Moral Objectives	2-1,2-2	
重点: Key Points	基本锁的协议:Lock-based protocols 死锁:Deadlock handling	
难点: Focal points	死锁:Deadlock handling	

知识单元序号: Knowledge Unit No.	9	支撑教学目标: SLOs Supported	1-1，1-4
知识单元名称 Unit Title	数据库恢复 Recovery system		
知识点: Knowledge Delivery	故障分类:Failure classification		
	数据转储:Datastorage 日志文件:Log files		
	恢复与原子性:Recovery and atomicity 恢复算法:Recovery algorithm 缓冲区管理:Buffer management 非易失性存储器故障:Failure with loss of non-volatile storage 远程备份系统:High availability using remote backup systems 锁释放和 UNDO 操作:Early lock release and logical undo operations		
学习目标: Learning Objectives	了解: Recognize	数据转储:Datastorage	
	理解: Understand	故障分类:Failure classification	
	掌握: Master	恢复与原子性:Recovery and atomicity 恢复算法:Recovery algorithm 日志文件:Log files 锁释放和 UNDO 操作 Early lock release and logical undo operations	
重点: Key Points	恢复与原子性:Recovery and atomicity 恢复算法:Recovery algorithm		

	日志文件:Log files 锁释放和 UNDO 操作:Early lock release and logical undo operations
难点: Focal points	锁释放和 UNDO 操作:Early lock release and logical undo operations

(2) 实验教学 Experiments

注：可根据实际情况增减行数。实验类型可分为验证性、设计性、综合性，实验性质可分为选做、必做。

Note: Please add/reduce lines based on subject. The Type contains Verify, Design, and Comprehensive, while the Pattern contains Required and Elective

序号 No.	实验项目名称 Experiment Topic	学时 Hours	每组人数 MPG*	实验类型 Type	实验性质 Pattern
1	数据库的建立与管理实验 Establishment and Management of DatabasesExperiment	2	1	设计性 Design	必做 Elec
2	数据表的建立与约束完整性实验 Establishment of Data Table and Constraint Integrity Experiment	2	1	设计性 Design	必做 Elec
3	数据更新与数据查询实验 Data Update and Data Query Experiment	2	1	设计性 Design	必做 Elec
4	索引与视图实验 Index and View Experiment	2	1	综合性 Comp	必做 Elec
	总计 Total	8			

*MPG: Members per group

实验项目序号: Experiment No.	1	支撑教学目标: SLOs Supported	1-1,1-3,1-4
每组成员: Members per Group	1	指导教师: Tutor	李佳音
实验名称: Experiment Title	数据库的建立与管理实验 Establishment and Management of DatabasesExperiment		
实验内容: Content	SQL SEVER2019 实验环境的搭建； Establishment of SQL SEVER2019 Experimental Environment；		
	在企业管理器中建立数据库； Establishing a database in Enterprise Manager；		
	在查询编辑器中建立数据库； Establishing a database in the query editor；		
	Create/Alter database 语句的使用； The use ofCreate/Alter database statements；		
学习目标: Learning Objectives	掌握在 sqlserver 环境中使用企业管理器和查询编辑器建立并管理数据库的方法，熟练使用 create/alter database 语句 Master the method of using Enterprise Manager and Query Editor to		

	establish and manage databases in SQL Server, and be proficient in using the create/filter database statement
教学要求: Requirements	每个学生独立完成实验，撰写实验报告 Each student completes the experiment independently, and writes the experiment report
实验场地: Location	综合楼 1108 Z1108
实验软硬件设备: Software/Hardware	SQLSERVER2019 SQLSERVERDatabase Management System software

实验项目序号: Experiment No.	2	支撑教学目标: SLOs Supported	1-1,1-3,1-4
每组成员: Members per Group	1	指导教师: Tutor	李佳音
实验名称: Experiment Title	数据表的建立与约束完整性实验 Establishment of Data Table and Constraint Integrity Experiment		
实验内容: Content	在企业管理器中建立数据库表； Establishing a databasetablein Enterprise Manager；		
	在查询编辑器中建立数据库表； Establishing a database tablein the query editor；		
	为数据表添加约束完整性条件 Add constraint integrity conditions to the data table；		
	Create/Alter table 语句的使用； The use of Create/Alter table statements；		
学习目标: Learning Objectives	掌握在 sqlserver 环境中使用企业管理器和查询编辑器建立并管理数据库表的方法，熟练使用 create/alter Table 语句并为数据表添加约束完整性条件 Master the method of using Enterprise Manager and Query Editor to establish and manage databases table in SQL Server, and be proficient in using the create/alter table statementandAdd constraint integrity conditions to the data table.		
教学要求: Requirements	每个学生独立完成实验，撰写实验报告 Each student completes the experiment independently, and writes the experiment report		
实验场地: Location	综合楼 1108 Z1108		
实验软硬件设备: Software/Hardware	SQLSERVER2019 SQLSERVERDatabase Management System software		

实验项目序号: Experiment No.	3	支撑教学目标: SLOs Supported	1-2,1-3,1-4
每组成员: Members per Group	1	指导教师: Tutor	李佳音

实验名称: Experiment Title	数据更新与数据查询实验 Data Update and Data Query Experiment
实验内容: Content	在企业管理器中进行数据表记录的插入和更新; Inserting and updating data table records in Enterprise Manage;
	在查询编辑器中进行数据表记录的插入和更新 Inserting and updating data table records in the query editor
	insert into/update 语句的使用 Use of insert into/update statements
	select 语句及其子句的使用 Use of Select statement and its clauses
学习目标: Learning Objectives	掌握在企业管理器中进行数据记录插入和更新的方法，熟练使用 insert into/update 语句，掌握使用 select 语句进行数据查询的方法 Master the methods of inserting and updating data records in Enterprise Manager, proficiently use insert into/update statements, and master the methods of using select statements for data queries
教学要求: Requirements	每个学生独立完成实验，撰写实验报告 Each student completes the experiment independently, and writes the experiment report
实验场地: Location	综合楼 1108 Z1108
实验软硬件设备: Software/Hardware	SQLSERVER2019 SQLSERVERDatabase Management System software

实验项目序号: Experiment No.	4	支撑教学目标: SLOs Supported	1-2,1-3,1-4
每组成员: Members per Group	1	指导教师: Tutor	李佳音
实验名称: Experiment Title	索引与视图实验 Index and View Experiment		
实验内容: Content	在企业管理器和查询编辑器中建立并管理索引 Establish and manage indexes in Enterprise Manager and Query Editor		
	在企业管理器和查询编辑器中建立并管理视图 Establish and manage views in Enterprise Manager and Query Editor		
	Create/alterindex/view 语句的使用 Use of Create/alterindex/view Statement		
	通过视图进行数据源表记录的插入、更新与删除 Inserting, updating, and deleting data source table records through views		
学习目标: Learning Objectives	掌握在企业管理器中建立和管理索引和视图的方法，熟练使用 Create/alterindex/view 语句，掌握通过视图进行数据源表记录的插入、更新与删除的方法 Master the methods of establishing and managing indexes and views in Enterprise Manager, proficiently use Create/filter index/view statements, and master the methods of inserting, updating, and deleting data source table records through views.		

教学要求: Requirements	每个学生独立完成实验，撰写实验报告 Each student completes the experiment independently, and writes the experiment report
实验场地: Location	综合楼 1108 Z1108
实验软硬件设备: Software/Hardware	SQLSERVER2019 SQLSERVERDatabase Management System software

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.	实践 PRAC.	PBL
绪论 Introduction	4	0	0	0
关系模型简介 Introduction to the relational model	6	0	0	0
SQL 语言基础 Introduction to SQL	6	2	0	0
中级及高级 SQL 语言 Intermediate SQL andadvanced SQL	6	2	0	0
数据库设计 Database design	6	4	0	0
关系数据设计理论 Relational database design theory	6	0	0	0
事务处理 Transactionsprocessing	2	0	0	0
并发控制 Concurrency control	2	0	0	0
数据库恢复 Recovery system	2	0	0	0
总计 Total	40	8	0	0

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

☑	多媒体教学：基于信息化设备的课堂教学 Multi-media-basedlecturing
☑	实践能力传授：理论与行业、实际案例相结合 Combining theory with industrial practical problems
☑	课程思政建设：知识讲授与德育相结合 Knowledgedeliverywithethiceducation
☑	PBL 教学：问题驱动的分组学习与交流 Problem-basedlearning
□	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	敬茂华
给分形式: Result Type	百分制 Marks	课程总成绩比重(%): Percentage (%)	30
考核方式: Measures	满分 100 分，以学生平时考勤、课堂表现、课堂教师随机提问，学期综合大作业完成情况综合评定，其中，学生考勤占比 50%，平时课堂表现、课堂教师随机提问占比 20%, 学生平时作业(课前预习作业、课后作业)完成情况占比 30%. The full score is 100. Students' attendance, classroom performance, random questions from teachers, and students' homework completion are comprehensively evaluated. Among them, students' attendance accounts for 50%, classroom performance and random questions from teachers account for 20%, and students' homework (preview homework before class and homework after class) accounts for 30%.		

考核环节: Assessment Content	实验 Experiment	环节负责人: Director	李佳音
给分形式: Result Type	百分制 Marks	课程总成绩比重(%): Percentage (%)	20
考核方式: Measures	满分 100 分，按要求完成实验课内容撰写并按时上交实验报告，按照学生的报告完成情况和贡献程度酌情给分，抄袭、给他人抄袭或未交实验报告不得分。 The full score is 100, record students' scores through comprehensive homework report. According to the students' report completion and contribution degree, the score is given. Plagiarism, plagiarism to others or failure to hand in the experimental report will not be scored.		

考核环节:	期末 Final	环节负责人:	敬茂华

Assessment Content		Director	
给分形式: Result Type	百分制 Marks	课程总成绩比重(%): Percentage (%)	50
考核方式: Measures	满分 100 分，通过批阅期末考试试卷给出学生成绩。 The full score is 100, and students' scores are given according to the final examination.		

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.

教学大纲改进机制 Subject Syllabus Improvement Mechanism			
考核周期(年): Check Period (YR)	4	修订周期(年): Revise Period (YR)	4
改进措施: Measures	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。 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 improvement.		
成绩评定改进机制 Assessment Improvement Mechanism			
考核周期(年): Check Period (YR)	1	修订周期(年): Revise Period (YR)	1
改进措施: Measures	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。 The subject coordinator shall revise the syllabus based on the teaching content, effect and result distribution while optimize the assessment measures.		