**《数据库》实验教学大纲**

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| 课程代码 | 145148 |
| 课程名称 | 数据库 |
| 英文名称 | Database |
| 课程类别 | 学科基础课 |
| 课程性质 | 必修 |
| 学时 | 总学时：64 实验：16 |
| 学分 | 3.5 |
| 开课学期 | 第四学期 |
| 开课单位 | 计算机科学与工程学院 |
| 适用专业 | 计算机科学与技术、网络工程、信息安全 |
| 授课语言 | 中文授课 |
| 先修课程 | 计算机组成和体系结构、高级语言程序设计 |
| 毕业要求（专业培养能力） | 本课程对学生达到如下毕业要求有如下贡献：  3.设计/开发解决方案：能够设计针对复杂与计算机相关工程问题的解决方案，设计满足特定需求的系统、单元（部件）或工艺流程，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。  4.研究：能够基于科学原理并采用科学方法对与计算机相关复杂工程问题进行研究，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。  5.使用现代工具：能够针对与计算机相关复杂工程问题，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。 |
| 课程培养学生的能力（教学目标） | 1．通过交互式SQL的使用， 掌握数据库的创建、插入、更新、查询等操作。  2．通过创建视图、触发器，设计安全机制等方式掌握数据库的安全和完整性的设计。  3．学会创建存储过程。  4．通过编写事务隔离级别的测试程序了解事务并发控制机制。  5．学会进行数据库的备份与恢复。 |
| 课程简介 | 本课程是计算机专业的专业必修课。实验教学的目的是通过上机实验的实践锻炼，使学生加深对所学理论知识的理解，学会使用数据库，并能设计简单的数据库应用程序。 |
| 主要仪器设备与软件 | PC机，数据库管理系统软件 |
| 实验报告 | 实验报告要包含“实验目的及要求“、“实验过程（实验步骤、实验数据）”和“小结” |
| 考核方式 | 实验操作（30％）＋实验报告（40％）+预习、考勤、实验纪律（30%) |
| 教材、实验指导书及教学参考书目 | 实验指导书：自编  参考书：杨海霞 主编. 《数据库实验指导》.人民邮电出版社. 2007 |
| 制定人及发布时间 | 董守玲 2017年7月5日 |

***“Database”* Experiment Teaching Syllabus**

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| Course Code | 145148 |
| Course Title | Database |
| Course Category | Disciplinary Basic Course |
| Course Nature | Compulsory Course |
| Class Hours | Total Class Hours: 64 Lab Hours: 16 |
| Credits | 3.5 |
| Semester | Fourth |
| Institute | School of Computer Science and Engineering |
| Program Oriented | Computer Science and Technology, Network Engineering, and Information Security |
| Teaching Language | Chinese |
| Prerequisites | Computer Organization and Architecture, and Advanced Language Programming |
| Student Outcomes (Special Training Ability) | 1. Design / Development Solutions: An ability to design solutions for complex engineering problems and innovatively design systems, components or process that meet specific needs with societal, public health, safety, legal, cultural and environmental considerations. 2. Research: An ability to conduct investigations of complex engineering problems based on scientific theories and adopting scientific methods including design of experiments, analysis and interpretation of data and synthesis of information to provide valid conclusions.   5. Applying Modern Tools: An ability to create, select and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modeling, to complex engineering activities, with an understanding of the limitations. |
| Teaching Objectives | 1. By using interactive SQL, master CREATE, INSERT, UPGRADE and SEARCH sentences. 2. By creating view, trigger, and designing security mechanism, master security and integrity design of database. 3. Know how to create procedures. 4. By writing test program of transaction isolation level, know concurrency control mechanism of action. 5. To know backup and recovery mechanism of database. |
| Course Description | This course is compulsory for students major in computer. Experiment teaching aims at reinforcing students’ understanding of learned theories, knowing how to deal with database and developing simple database application through computer-aided experiments. |
| Instruments and Equipments | PC, Database management system software. |
| Experiment Report | Includes “Objectives and requirement of experiment”, “Experience process (steps and data)”, and “Summary”. |
| Assessment | Experimental operation (30%) + Experiment report (40%) + Preview, Attendance, and Experiment Discipline (30%) |
| Teaching Materials and Reference Books | Guide books for experiment: Self-edited.  Reference: Yang Haixia (Editor-in-chief), Guide of Database Experiment, published by Posts and Telecom Press, 2007. |
| Prepared by Whom and When | Shouling DONG, 2017.7.5 |

**《课程名称》实验教学内容与学时分配**

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| 实验项目编号 | 实验项目名称 | 实验学时 | 实验内容提要 | 实验类型 | 实验要求 | 每组人数 | 主要仪器设备与软件 |
| 1 | 交互式SQL的使用 | 4 | 通过交互式SQL的使用， 掌握数据库的创建、插入、更新、查询等操作 | 设计性 | 必做 | 1 | PC机，数据库管理系统软件 |
| 2 | 数据库的安全和完整性约束 | 4 | 通过创建视图、触发器，设计安全机制等方式掌握数据库的安全和完整性的设计（嵌入高级语言） | 设计性 | 必做 | 1 | PC机，数据库管理系统软件 |
| 3 | SQL编程 | 4 | 学会创建存储过程 | 设计性 | 必做 | 1 | PC机，数据库管理系统软件 |
| 4 | 事务的管理 | 4 | 通过编写事务隔离级别的测试程序了解事务并发控制机制  学会进行数据库的备份与恢复 | 设计性 | 必做 | 1 | PC机，数据库管理系统软件 |
| 2 |  |  | 高级语言 |  |  |  |  |
| 3 |  |  | 触发器、存储 |  |  |  |  |
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***“Database”* Experimental Teaching Arrangements**

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| No. | Experiment Item | Class Hours | Content Summary | Category | Requirements | Number of StudentsEach Group | Instruments, Equipments and Software |
| 1 | Use of Interactive SQL | 4 | By using interactive SQL, master CREATE, INSERT, UPGRADE, and SEARCH sentences. | Design | Compulsory | 1 | PC, Database management system software |
| 2 | Security and Integrity Constraints of database | 4 | By creating view, trigger, and designing security mechanism, master security and integrity design of database | Design | Compulsory | 1 | PC, Database management system software |
| 3 | SQL Programming | 4 | Know how to create procedures | Design | Compulsory | 1 | PC, Database management system software |
| 4 | Action Management | 4 | Know concurrency control mechanism of action by writing test program of transaction isolation level.  Know how to backup and recovery of database. | Design | Compulsory | 1 | PC, Database management system software |
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