**软件工程**

**Software Engineering**

**Major Code：**080902

**Period of Schooling：**4 years

**Granted Degree：**Bachelor of Engineering

**Major Introduction：**The School of Software Engineering is the first batch of national demonstration software colleges approved by the Ministry of Education in 2001. The school adheres to the teaching idea of "New Mechanism for Operation, New Pattern for Training; Intensive Engineering Training, Close Cooperation with Enterprise , Achieve International Integration; Cultivate comprehensive elites with good foundation, strong ability, excellent English and collaborative ability for software research and development", and is committed to cultivate high-level international software elites. The college has the "National Experimental Zone of Innovation Model to Cultivate Software Talent", the first batch of "Excellent Engineer Education Program" pilot majors of the Ministry of Education, the "National Engineering Practice Education Center" and the "Comprehensive Reform for Undergraduate" pilot majors of the Ministry of Education, the "Experimental Zone of Innovation Model to Cultivate Software Talent" of Guangdong Province, and the "Comprehensive Reform for Undergraduate" pilot majors of Guangdong Province. This training program focuses on the cultivation of engineering talents, and strengthens the spirit and ability of innovation through innovative teaching methods, outstanding practice links and introduction of corporate project training.

**一、学分统计表（Credits Registration Form）**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 课程类别Course Category | 课程要求Requirement | 学分Credits | 学时Academic Hours | 备注Remarks |
| 公共基础课General Basic Courses | 必修Compulsory | 63.5 | 988 |  |
| 通识General Education | 10.0 | 160 |  |
| 学科基础课Disciplinary Basic Courses | 必修Compulsory | 37.0 | 672 |  |
| 选修Elective | 0 | 0 |  |
| 专业领域课Specialty- related Courses | 必修Compulsory | 7.0 | 128 |  |
| 选修Elective | 27.5 | 352 | Part of the courses is are Practice Training |
| 合计Total | 145.0 | 2300 |  |
| 集中实践教学环节（周）Practice Training (Weeks) | 必修Compulsory | 32.0 | 48 weeks |  |
| 毕业学分要求Credits Required for Graduation | 145.0+32.0=177.0 |

Remark: Students must also obtain 2 humanistic quality education credits and 4 innovation ability training credits in Second Courses while obtaining the credits specified in specialized teaching plan.

**二、专业教学计划表（Teaching Schedule）**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **类别**Course Category | **课程****代码**Course No. | **课程名称**Course Title | **是否必修**C/E | **学时数**Total Curriculum Hours | **学分数**Credits | **开课****学期**Semester | **毕业****要求**Student Outcomes |
| **总学时**Class Hours | **上机**Computer-aided Class Hours | **实验**Lab Hours | **实践**PracticeHours |
| **公共基础课General Basic Courses** | 143091 | 中国近现代史纲要Skeleton of Chinese Modern History | 必修课C | （32）24 |  |  |  | 2.0 | 1 | №8 |
| 144001 | 大学英语（一）College English(1) | 64 |  |  |  | 4.0 | 1 | №10 |
| 152001 | 体育（一）Physical Education (1) | 32 |  |  | 32 | 1.0 | 1 | №12 |
| 140195 | 数学分析（一）Mathematics Analysis(1) | 80 |  |  |  | 5.0 | 1 | №1,2 |
| 140197 | 线性代数Linear Algebra | 48 |  |  |  | 3.0 | 1 | №1,2 |
| 155011 | 高级语言程序设计（C++）（Ⅰ）Advanced Language Program Design in C++ Ⅰ | 64 | 16 |  |  | 3.5 | 1 | №1,5 |
| 130009 | 工程制图Engineering Drawing | 48 |  |  |  | 3.0 | 1 | №1,2,5 |
| 143093 | 思想道德修养与法律基础Cultivation of Thought and Morals & Fundamental of Law | （40）（36） |  |  |  | 2.5 | 2 | №8 |
| 144002 | 大学英语（二）College English(2) | 64 |  |  |  | 4.0 | 2 | №10 |
| 152002 | 体育（二）Physical Education (2) | 32 |  |  | 32 | 1.0 | 2 | №12 |
| 106001 | 军事理论Military Principle | （16） |  |  |  | 1.0 | 2 | №9 |
| 140196 | 数学分析（二）Mathematics Analysis(2) | 112 |  |  |  | 7.0 | 2 | №1,2 |
| 141005 | 大学物理Ⅲ（一）General Physics (1) | 64 |  |  |  | 4.0 | 2 | №1,2 |
| 141007 | 大学物理实验（一）Physics Experiment(1) | 32 |  | 32 |  | 1.0 | 2 | №1,2 |
| 140019 | 概率论与数理统计Probability & Mathematical Statistics | 48 |  |  |  | 3.0 | 2 | №1,2 |
| 155012 | 高级语言程序设计（C++）（Ⅱ）Advanced Language Program Design in C++ Ⅱ | 32 | 8 |  |  | 2.0 | 2 | №1,5 |
| 152003 | 体育（三）Physical Education (3) | 32 |  |  | 32 | 1.0 | 3 | №12 |
| 143090 | 马克思主义基本原理Fundamentals of Marxism Principle | （40）36 |  |  |  | 2.5 | 3 | №8 |
| 141006 | 大学物理Ⅲ（二）General Physics (2) | 64 |  |  |  | 4.0 | 3 | №1,2 |
| 141008 | 大学物理实验（二）Physics Experiment(2) | 32 |  | 32 |  | 1.0 | 3 | №1,2 |
| 143106 | 毛泽东思想和中国特色社会主义理论体系概论Thought of Mao ZeDong and Theory of Socialism with Chinese Characteristics | (80)48 |  |  |  | 5.0 | 4 | №8 |
| 152004 | 体育（四）Physical Education (4) | 32 |  |  |  | 1.0 | 4 | №12 |
| 143094 | 形势与政策Analysis of the Situation & Policy | (128) |  |  |  | 2.0 | 1-8 | №8 |
|  | 人文科学领域Humanities | 通识课E | 96 |  |  |  | 6.0 |  | №8 |
|  | 社会科学领域Social Science | 64 |  |  |  | 4.0 |  | №8 |
| 合计Total | 1148 | 24 | 64 | 128 | 73.5 |  |  |

**三、专业教学计划表（续）（Teaching Schedule）**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **类别**Course Category | **课 程****代 码**Course No. | **课程名称**Course Title | **是否必修**C/E | **学时数**Total Curriculum Hours | **学分数**Credits | **开课****学期**Semester | **毕业****要求**Student Outcomes |
| **总学时**Class Hours | **上机**Computer-aided Class Hours | **实验**Lab Hours | **实践**Practice |
| **学科基础课Disciplinary Basic Courses** | 155290 | 计算机与软件工程概论Introduction to Computer & Software Engineering | C | 32 |  |  |  | 2.0 | 1 | №1 |
| 135003 | 电路与电子技术Electric Circuit and Electronics | C | 64 |  |  |  | 4.0 | 2 | №2,3 |
| 155172 | 数字逻辑Digital Circuits and Logic Design | C | 48 |  | 16 |  | 2.5 | 2 | №2,3 |
| 155320 | C++程序开发实训C++ program development Training | C | 5 weeks |  |  |  | 5.0 | 2\* | №2,3,5,9, 10,11 |
| 135037 | 电路与电子技术实验Experiment of Electric Circuit and Electronics | C | 32 |  | 32 |  | 1.0 | 3 | №1,2,3 |
| 155231 | 离散数学Discrete Mathematics | C | 64 |  |  |  | 4.0 | 3 | №1,2 |
| 155141 | 计算机组成与体系结构Computer Organization & Architecture | C | 64 | 16 |  |  | 3.5 | 3 | №2,3,4 |
| 155016 | 数据结构Data Structure | C | 64 | 16 |  |  | 3.5 | 3 | №3,4 |
| 155189 | 操作系统Operating System | C | 64 | 16 |  |  | 3.5 | 3 | №3,4,5 |
| 155174 | 编译技术Principle of Compiler | C | 48 | 16 |  |  | 2.5 | 4 | №3,4,5 |
| 155021 | 计算机网络Computer Network | C | 64 | 16 |  |  | 3.5 | 4 | №3,4,5 |
| 155147 | 数据库系统Database System | C | 64 | 16 |  |  | 3.5 | 4 | №3,4,5 |
| 155321 | 软件分析设计与建模Analysis Design and Modeling of Software Requirement | C | 64 | 16 |  |  | 3.5 | 4 | №2,3,5 |
| 155319 | 数据库开发实训\*\*Database Experiment and Training | E | 5 weeks |  |  |  | 5.0 | 4\* | №2,3,5,9, 10,11 |
| 155349 | 软件开发综合实训\*\*Software Development and Comprehensive Training | E | 5 weeks |  |  |  | 5.0 | 4\* | №2,3,5,9, 10,11 |
| **合　计****Total** | 必C | 672 | 112 | 48 |  | 37.0 |  |  |
| **专业领域课 Specialty Courses** | 155058 | Java语言程序设计Programming in Java | E | 40 | 16 |  |  | 2.0 | 3 | №1,5 |
| 155315 | 软件项目管理Software Project Management | C | 64 | 16 |  |  | 3.5 | 5 | №2,3,5,67,11 |
| 155324 | 软件测试与维护Software Testing and maintenance | C | 64 | 16 |  |  | 3.5 | 5 | №5,6,7 |
| 155306 | 软件体系结构Software Architecture | E | 64 | 16 |  |  | 3.5 | 5 | №2,3,4,5,6,7 |
| 155344 | 算法设计与分析Algorithm design and analysis | E | 48 | 16 |  |  | 2.5 | 5 | №1,2,3,4,5 |
| 155382 | 软件工程经济学Software Engineering Economics | E | 48 | 16 |  |  | 2.5 | 6 | №1,2 |
| 155391 | 图像处理基础Fundamentals of Image Processing | E | 48 | 16 |  |  | 2.5 | 5 | №1,2,3,4,5 |
| 155326 | 人工智能1(1)Artificial Intelligence | E | 48 | 16 |  |  | 2.5 | 5 | №1,2,3,4,5 |
| 155387 | 机器学习1(2)Machine Leaning | E | 48 | 16 |  |  | 2.5 | 5 | №1,2,3,4,5 |
| 155165 | 数据挖掘1(3)Data mining | E | 40 | 16 |  |  | 2 | 5 | №1,2,3,4,5 |
| 155392 | 机器视觉1(4)Machine Vision  | E | 32 |  |  |  | 2.0 | 6 | №1,2,3,4,5 |
| 155393 | 大数据开发实训1(5)Large data development training | E | 6 weeks |  |  |  | 6.0 | 6\* | №1,2,3,4,5,9,11 |
| 155394 | 机器人编程基础2(1)Basics Programming of Robot | E | 48 | 16 |  |  | 2.5 | 5 | №1,2,3,4,5 |
| 155395 | 物联网基础与应用2(2)Foundation and Application of Internet of Things | E | 48 | 16 |  |  | 2.5 | 5 | №1,2,3,4,6,7 |
| 155396 | 嵌入式软件优化技术2(3)Embedded Software Optimization Technology | E | 48 | 16 |  |  | 2.5 | 6 | №1,2,3,4,5 |
| 155352 | 嵌入式软件项目实训2(4)Embedded software project training | E | 6 weeks |  |  | 6 weeks | 6.0 | 6\* | №1,2,3,4,5,9,11 |
| 155152 | 计算机图形学3(1)Computer Graphics | E | 48 | 16 |  |  | 2.5 | 5 | №1,2,3,4,5 |
| 155336 | 计算机视觉3(2)computer vision | E | 48 | 16 |  |  | 2.5 | 6 | №1,2,3,4,5 |
| 155341 | 3D游戏引擎架构设计基础3(3)Foundation of 3D Game Engine Architecture Design | E | 48 | 16 |  |  | 2.5 | 6 | №1,2,3,4,5 |
| 155397 | 自然语言处理3(4)Natural Language Processing | E | 48 | 16 |  |  | 2.5 | 6 | №1,2,3,4,5 |
| 155345 | 数字媒体开发实训3(5)Digital Media development Training | E | 6 weeks |  |  | 6 weeks | 6.0 | 6\* | №1,2,3,4,5,9,11 |
| 155398 | IOS平台应用开发4(1)Developing apps for iOS | E | 48 | 16 |  |  | 2.5 | 5 | №2,3,4,5 |
| 155389 | Android程序设计与开发4(2)Android Programming and Development | E | 48 | 16 |  |  | 2.5 | 5 | №2,3,4,5 |
| 155342 | 智能人机交互4(3)Intelligent human-machine interact | E | 48 | 16 |  |  | 2.5 | 5 | №1,2,3,4,5 |
| 155346 | 移动计算及软件开发实训4(4)Development Technical Training of Mobile Computing and software | E | 6 weeks |  |  | 6 weeks | 6.0 | 6\* | №1,2,3,4,5,9,11 |
| 155327 | WEB服务与面向服务的体系结构Web Services and SOA | E | 48 | 16 |  |  | 2.5 | 5 | №2,3,4,5 |
| 155374 | 并行程序设计Parallel program Design | E | 40 | 16 |  |  | 2.0 | 6 | №2,3,4,5 |
| 155334 | Java EE分布式架构Java EE Distributed Architecture | E | 32 |  |  |  | 2.0 | 6 | №2,3,4,5 |
| 155160 | 电子商务Electronic Commerce | E | 40 | 16 |  |  | 2.0 | 6 | №1,2,3,5 |
| 145042 | 信息系统安全Information system security | E | 32 | 16 |  |  | 1.5 | 6 | №2,3,4,5,6,8 |
| 155377 | 计算思维Computational thinking | E | 32 | 8 |  |  | 2.0 | 4 | №2,3,4 |
| 155399 | 区块链技术与应用Block chain technology and application | E | 32 | 16 |  |  | 1.5 | 4 | №2,3,4,5 |
| 155400 | 云计算应用与开发Cloud computing application and development | E | 32 | 16 |  |  | 1.5 | 4 | №2,3,4,5 |
| 155338 | Java EE 软件开发项目实训Java EE software development training | E | 6 weeks |  |  | 6 weeks | 6.0 | 6\* | №1,2,3,4,5,9,11 |
| 155362 | 企业软件项目实训Enterprise software project Training | E | 6 weeks |  |  | 6 weeks | 6.0 | 6\* | №1,2,3,4,5,9,10,11 |
| **合　计****Total** | 必C | 128 | 32 |  |  | 7.0 |  |  |
| 选E | 与集中实践教学环节中选修课一起修读最低要求27.5学分（按方向修读）minimum elective course credits required:27.5 |

Remark: 1. Courses with superscripts such as  1(1) are in the specialized direction field, where number outside the brackets indicate the number of the courses group in direction filed (1 is for filed of Big Data; 2 is for field of Embedded System and Software; 3 is for filed of Digital Media; 4 is for Mobile Computing and Software). The number in parentheses is the serial number of the course in the courses group corresponding to the direction field. Students must complete all courses included at least in one direction filed. 2. Courses with "\*" are not set up until 14 weeks after the start of the semester. 3. Courses With "\*\*" stand for one of the two must be selected. 4. Training courses are not included in this column, but included in the Practice-concentrated Training.

**四、集中实践教学环节(Practice-concentrated Training)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **课程****代码**Course No | **课程名称**Course Title | **是否必修**C/E | **学时数**Total Curriculum Hours | **学分数**Credits | **开课****学期**Semester | **毕业要求**Student Outcomes |
| **实践**Practiceweeks | **授课**Lecture Hours |
| 106002 | 军训Military Training | C | 3 weeks |  | 3.0 | 1 | №12 |
| 143197 | 马克思主义理论与实践Marxism Theory and Practice | C | 2 weeks |  | 2.0 | Holiday | №8 |
| 155357 | 数字系统创意设计Digital system creative design | E | 3 weeks |  | 3.0 | 1 | №2,3 |
| 155320 | C++程序开发实训C++ program development Training | C | 5 weeks |  | 5.0 | 2\* | №2,3,5,9,11 |
| 141073 | 电子工艺实习ⅡPractice of Electronic | C | 2 weeks |  | 2.0 | 4 | №1,2,3 |
| 155319 | 数据库开发实训\*\*Database development Training | E | 5 weeks |  | 5.0 | 4\* | №2,3,5,9,11 |
| 155349 | 软件开发综合实训\*\*Software development and comprehensive training | E | 5 weeks |  | 5.0 | 4\* | №2,3,5,9,11 |
| 155393 | 大数据开发实训1(5)Large data development training | E | 6 weeks |  | 6.0 | 6\* | №1,2,3,4,5,9,11 |
| 155352 | 嵌入式软件项目实训2(4)Embedded software project training | E | 6 weeks |  | 6.0 | 6\* | №1,2,3,4,5,9,11 |
| 155345 | 数字媒体开发实训3(5)Digital Media development Training | E | 6 weeks |  | 6.0 | 6\* | №1,2,3,4,5,9,11 |
| 155346 | 移动计算及软件开发实训4(4)Development Technical Training of Mobile Computing and software | E | 6 weeks |  | 6.0 | 6\* | №1,2,3,4,5,9,11 |
| 155338 | Java EE 软件开发项目实训Java EE Software Development Project Training | E | 6 weeks |  | 6.0 | 6\* | №1,2,3,4,5,9,11 |
| 155362 | 企业软件项目实训Enterprise software project Training | E | 6 weeks |  | 6.0 | 6\* | №1,2,3,4,5,9,10,11 |
| 155075 | 毕业实习Practice on Diploma Project | C | 16 weeks |  | 5.0 | 7 | №1,2,3,4,5,9,10,11 |
| 155076 | 毕业设计Diploma Project | C | 15 weeks |  | 15.0 | 8 | №1,2,3,4,5,9,10,11 |
| **合　计****Total** | 必C | 48 |  | 32.0 |  |  |
| 选E | 与专业领域课中选修课一起修读最低要求27.5学分（按方向修读）minimum elective course credits required:27.5 |

**五、第二课堂(Second Courses)**

Second Courses consists of two parts: humanistic quality education and innovation ability training.

**1.Basic Requirements for Humanistic Quality Education**

While obtaining the credits required by the specialized teaching plan, students should also participate in the extracurricular humanities quality education activities in accordance with their own interests. The accumulated credits for the activities should be not less than 2 credits.

**2.Basic Requirements for Innovation Ability Training**

Students must also participate in the National Innovation and Entrepreneurship Training Program or the Guangdong Innovation and Entrepreneurship Training Program or the SRP (Student Research Program) or the 100-step ladder climbing program or the various types of extracurricular innovation ability training (such as academic competitions, academic lectures, etc.) for a certain period of time. The total number of credits for participating in the activity should be not less than 4 credits.