

计算机科学与技术

Computer Science and Technology

专业代码：080901

学 制：4 年

Program Code:080901

Duration: 4 years

培养目标：

培养热爱祖国，坚持社会主义道路、德、智、体全面发展，具有扎实的计算机学科的理论基础，较强的英语能力、知识面广，实践动手能力强的研究型、或工程型计算机高级专业人才。毕业生，能在信息技术产业，科研部门，高等院校、企业、事业及其相关领域从事信息科学与技术的研究、设计、开发及管理等方面的工作，并可继续攻读计算机科学与技术、相关学科与交叉学科的硕士学位。

Educational Objectives:

To cultivate comprehensive-development students in morality, intellect and sports, with a solid theoretical foundation of computer science, a wide range of knowledge, practical ability to research, or engineering computer professionals. Besides, Graduates will have strong English ability and could do various aspects of the work in information technology industry, research institutes, universities and related fields in Information Science and technology like research, design, development and management. Furthermore, graduates can continue to study computer science and technology, or other related disciplines and cross discipline master's degree.

毕业要求：

№1.工程知识：能够将数学、自然科学、工程基础和专业知用于解决计算机复杂工程问题。

№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，识别、表达、并通过文献研究分析计算机复杂工程问题，以获得有效结论。

№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。

№6.工程与社会：能够基于工程相关背景知识进行合理分析，评价计算机专业工程实践和复杂计算机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。

№7.环境和可持续发展：能够理解和评价针对与计算机相关复杂工程问题的专业工程实践对环

境、社会可持续发展的影响。

№8.职业规范：具有人文社会科学素养、社会责任感，能够在工程实践中理解并遵守工程职业道德和规范，履行责任。

№9.个人和团队：能够在计算机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。

№10.沟通：能够就与计算机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，包括撰写报告和设计文稿、陈述发言、清晰表达或回应指令。并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。

№11.项目管理：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。

№12.终身学习：具有自主学习和终身学习的意识，有不断学习和适应发展的能力。

Student Outcomes:

№1.Engineering Knowledge: An ability to apply knowledge of mathematics, science, engineering fundamentals and engineering specialization to the solution of complex engineering problems.

№2.Problem Analysis: An ability to identify, formulate and analyze complex engineering problems, reaching to substantiated conclusions using basic principles of mathematics, science, and engineering.

№3.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.

№4.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 modelling, to complex engineering activities, with an understanding of the limitations.

№6.Engineering and Society: An ability to apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice.

№7.Environment and Sustainable Development: An ability to understand and evaluate the impact of professional engineering solutions in environmental and societal contexts and demonstrate knowledge of and need for sustainable development.

№8.Professional Standards: An understanding of humanity science and social responsibility, being able to understand and abide by professional ethics and standards responsibly in engineering practice.

№9.Individual and Teams: An ability to function effectively as an individual, and as a member or leader in diverse teams and in multi-disciplinary settings.

№10.Communication: An ability to communicate effectively on complex engineering problems with the engineering community and with society at large, such as being able to comprehend and write effective

reports and design documentation, make effective presentations, give and receive clear instructions, and communicate in cross-cultural contexts with international perspective.

№11.Project Management: Demonstrate knowledge and understanding of engineering management principles and methods of economic decision-making, to function in multidisciplinary environments.

№12.Lifelong Learning: A recognition of the need for, and an ability to engage in independent and life-long learning with the ability to learn continuously and adapt to new developments.

专业简介:

华南理工大学是我国高等学校最早从事计算机科研与教学的单位之一，1958 年开始计算机科学研究工作，成功研制出华南地区第一台模拟式电子计算机，其后又研制成功我国第一台俄汉翻译机。1960 年设立计算机专业，1981 年成立计算机科学与工程系，2001 年成立计算机科学与工程学院。计算机科学与技术是国家一级学科，国家特色专业、广东省一级重点学科。本专业具有良好的人才培养条件和实验平台，拥有专任教师 50 余人，师资力量雄厚。

Program Profile:

South China University of Technology is one of the earliest universities engaged in the research and teaching of computer science in China. In 1958, the university began the work of computer science research, and successfully developed the first analogue computer in South China, then again successfully developed the first Russian translation machine in China. The university set up the computer science specialty in 1960, established the department of computer science and engineering in 1981, and the established the school of computer science and engineering in 2001. The computer science and technology specialty is the national characteristic specialty, the name-brand specialty of Guangdong Province, and the key specialty of Guangdong Province. This specialty has well conditions and experimental platform to cultivate good talent and has more than 50 full-time teachers, in which 1 person of Changjiang Scholars, 1 person of the National Outstanding Youth, 1 person of National Excellent Youth, 3 people of Guangdong Outstanding Youth, and 1 person of the Pearl River Young Scholars.

专业特色:

本专业注重学生的计算机科学与技术应用能力、研究能力和创新能力的培养。ACM 竞教结合，加强基础课教学，开设数学分析课程加强学生的数学基础；开设“多媒体技术”和“人工智能”专业领域课程模块开拓学生的视野，培养研究能力；开设“软件开发”专业领域课加强工程实践课程教学，培养工程实践、开发能力；“产学研合作”、“学生研究计划和第二课堂”的实施培养学生的动手能力和创新能力。

Program Features:

This specialty pays attention to student's computer science and the technical application ability, the research

ability and the innovation ability. We cultivate students' practice ability and innovation ability by the followings: combining teaching with ACM competitions, strengthening basic course teaching, setting up mathematical analysis course to strengthen the mathematical foundation of students, setting up "multimedia technology" and "artificial intelligence" professional curriculum modules to widen students' horizons and cultivate research ability, setting up software development professional courses with strong engineering practice teaching to cultivate the engineering practice and development ability, cooperation of industry, education and research, setting up student research program and "the second class".

授予学位：工学学士学位

Degree Conferred: Bachelor of Engineering

主干课程：

高级语言程序设计、离散数学、数据结构、数字逻辑、计算机组成与体系结构、编译原理、操作系统、数据库、软件工程、算法设计与分析、计算机网络、计算方法、嵌入式系统。

Core Courses:

Advanced Language Programmer, Discrete Mathematics, Data Structure, Digital Logic, Computer Organization and Architecture, Principles of Compiler, Operating Systems, Database, Software Engineering, The Design and Analysis of Computer Algorithms, Computer Networks, Computation Methods, Embedded System

特色课程：

全英语教学课程：模式识别导论

双语教学课程：计算机科学概论、数据结构、计算机图形学与虚拟现实、数据仓库与数据挖掘、计算机网络

研究型课程：人工智能、智能机器人技术、多媒体技术、数字图象处理、高性能计算机与云计算

MOOC：Python 语言程序设计、数据结构、移动终端开发进阶版--Android 应用设计与开发（腾讯模块课）

本研共享课：高级计算机网络、最优化高级计算方法、高级数据库系统、高级操作系统与分布式系统、数据库管理及应用、操作系统与系统编程

校企合作课：移动应用开发（Android）（Google）、WEB 程序设计（Google）、高性能计算与云计算（Google, IBM）、移动终端开发进阶版--Android 应用设计与开发（腾讯）

工作坊或专题设计：三年级进团队

竞教结合课程：高级语言程序设计、算法分析与设计、数据结构

创新实践课程：嵌入式课程设计、软件工程课程设计

创业教育课程：IT 商业模式与创业

Featured Courses:

Courses Taught in English: Introduction to pattern Recognition

Bilingual Courses: Foundations of Computer Science, Data Structure, Computer Graphics, The Design and Analysis of Computer Algorithms, Computer Network

Research Courses: Artificial Intelligence, Intelligent Computer Technology, Multimedia Technology, Digital Image Processing, High Performance Computing and Cloud Computing

MOOCs: Python Language Programming, Mobile Application Development (IOS), Data Structure, Mobile Ends Development Progress

Baccalaureate-Master's Integrated Courses: Advanced Computer Network, Advanced Optimization Method, Advanced Database, Advanced Operating System and Distributed System, Database Management and Application, Operating system and system programming

Cooperative Courses with Enterprises: Mobile Application Development (Anadroid, Googble), WEB programming(Google), High Performance Computing and Cloud Computing(Google, IBM), Mobile Ends Development Progress(Tencent)

Workshops: Participate mentor team in grade three

Contest-Teaching Integrated Courses: Advanced Language Programmer, The Design and Analysis of Computer Algorithms, Data Structure

Innovation Practice: Embedded System Curriculum Design, Software Engineering Curriculum Design, Innovation Research Practice 1, Innovation Research Practice 2

Entrepreneurship Courses: IT Business Mode and Entrepreneurship, Entrepreneurial Practice

2.类别统计表 (Category Registration Form)

学时 Academic Hours					学分 Credits						
总学时数 Total	其中 Include		其中 Include		总学分数 Total	其中 Include		其中 Include			其中 Include
	必修学时 Compulsory	选修学时 Elective	理论教学学时 Theory Course	实验教学学时 Lab		必修学分 Compulsory	选修学分 Elective	集中实践教学环节学分 Practice-concentrated Training	理论教学学分 Theory Course Credits	实验教学学分 Lab	创新创业教育学分 Innovation and Entrepreneurship Education
2285	1928	357	1879	406	178	149.5	28.5	41	124	13	24.5

三、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-ai ded Class Hours	实验 Lab Hours	实践 Practice Hours			
公共基础课 General Basic Courses	143093	思想道德修养与法律基础 Cultivation of Thought and Morals & Fundamental of Law	必修 课 C	(40) (36)				2.5	2	№8
	143091	中国近现代史纲要 Skeleton of Chinese Modern History		(32) 24				2.0	1	№8
	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
	143090	马克思主义基本原理 Fundamentals of Marxism Principle		(40) 36				2.5	3	№8
	143094	形势与政策 Analysis of the Situation & Policy		(128)				2.0	1-8	№8
	144001	大学英语 (一) College English(1)		64				4.0	1	№10
	144002	大学英语 (二) College English(2)		64				4.0	2	№10
	152001	体育 (一) Physical Education (1)		32			32	1.0	1	№12
	152002	体育 (二) Physical Education (2)		32			32	1.0	2	№12
	152003	体育 (三) Physical Education (3)		32			32	1.0	3	№12
	152004	体育 (四) Physical Education (4)		32			32	1.0	4	№12
	106001	军事理论 Military Principle		(16)				1.0	2	№9
	140195	数学分析 (一) Mathematics Analysis(1)		80				5.0	1	№2
	140196	数学分析 (二) Mathematics Analysis(2)		112				7.0	2	№1,2
	140197	线性代数与解析几何 Linear Algebra & Analytic Geometry		48				3.0	1	№1,2
	140019	概率论与数理统计 Probability & Mathematical Statistics		48				3.0	2	№1,2
	141005	大学物理 II (一) General Physics (1)		64				4.0	2	№1,2
	141006	大学物理 II (二) General Physics (2)		64				4.0	3	№1,2
	141007	大学物理实验 (一) Physics Experiment(1)		32			32	1.0	2	№1,2
	141008	大学物理实验 (二) Physics Experiment(2)		32			32	1.0	3	№1,2
130009	工程制图 Engineering Drawing	48				3.0	2	№1,2,5		

145218	高级语言程序设计 (C++) (一) Advanced Language Programming (C++) (1)		64	16			3.5	1	№1,5
145219	高级语言程序设计 (C++) (二) Advanced Language Programming(C++) (2)		32	6			2.0	2	№1,5
	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	22	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	145272	计算机科学概论 Foundations of Computer Science	必 C	16				1.0	1	№1
	145285	IT 前沿技术 IT Frontier Technology	必 C	16				1.0	1	№1
	145051	离散数学 Discrete Mathematics	必 C	64				4.0	1	№1,2
	145216	数字逻辑 Digital Logic	必 C	32		8		2.0	3	№2,3
	135002	电路与电子技术 Electric Circuit and Electronics	必 C	64				4.0	3	№1,2,3
	145055	数据结构 Data Structure	必 C	64	16			3.5	3	№3,4
	135037	电路与电子技术实验 Experiment of Electric Circuits and Electronics	必 C	32		32		1.0	4	№1,2,3
	145148	数据库 Database	必 C	64	16			3.5	4	№3,4,5
	145196	计算机组成与体系结构 Computer Organization and Architecture	必 C	64		16		3.5	4	№2,3,4
	145120	算法设计与分析 Algorithm Design and Analysis	必 C	64	16			3.5	4	№3,4,5
145214	软件工程 Software Engineering	必 C	48	16			2.5	5	№2,3,9,11	

	145287	IT 商业模式与创业 IT Business Mode and Entrepreneurship	必 C	16				1.0	5	№9,11
	145158	操作系统 Operating SystemS	必 C	64	16			3.5	5	№3,4,5
	145100	编译原理 Principles of Compiler	必 C	56	16			3.0	5	№3,4,5
	145036	计算机网络 Computer Networks	必 C	64		16		3.5	5	№3,4,5
	145170	嵌入式系统 Embedded Systems	必 C	64		16		3.5	6	№3,6,7
	145022	计算方法 Computation Methods	必 C	48	8			3.0	6	№1,2,4,5
		合 计 Total	必 C	840	104	88		47.0		
专业 领域 课	人工智能模块									
	145172	人工智能 Artificial Intelligence	选 E	40				2.5	5	№4,5,6,7
	145154	数据仓库与数据挖掘 Data Warehouse and Data Mining	选 E	48	16			2.5	6	№4,5,6
	145030	智能机器人技术 Intelligent Robot Technology	选 E	48	12			2.5	7	№4,5,6,7
	145309	神经网络与深度学习 Neural Networks and Deep Learning	选 E	32				2.0	5	№4,5,6,7
	145310	机器学习 Machine Learning	选 E	32				2.0	7	№4,5,6,7
	145143	模式识别导论 Introduction to pattern Recognition	选 E	40	8			2.5	6	№2,3
	多媒体模块									
	145164	计算机图形学与虚拟现实 Computer Graphics and Virtual Reality	选 E	48	16			2.5	5	№4,5,6,7
	145161	多媒体技术 Multimedia Technology	选 E	40	8			2.5	6	№4,5
	145176	数字图象处理 Digital Image Processing	选 E	32	8			2.0	7	№4,5
	软件开发模块									
	145251	软件设计与体系结构 Software Design and Architecture	选 E	32	8			2.0	6	№5,9,10
	145311	开源技术与应用 Open Source Technology and Application	选 E	32	8			2.0	6	№2,3
	145302	大数据技术 Big Data Technology	选 E	40	8			2.5	6	№2,3

145177	软件项目管理 Software Project Management	选 E	48	8			3.0	6	№2,3,9,11
145280	软件测试与质量保证 Software Testing and Quality Assurance	选 E	32	8			2.0	6	№5,9,10
其它选修课									
145210	Java 程序设计 Java Programming	选 E	40	8			2.5	2	№3,5
145305	Python 语言程序设计 Python Language Programming	选 E	32	8			2.0	3	№3,5
145292	移动终端开发进阶版--Android 应用设计与开发（腾讯） Advanced Mobile Application Development-Android(Tencent)	选 E	32	8			2.0	6	№3,5
145153	数学建模与实验 Mathematical Modeling and Experiment	选 E	40	16			2.0	3	№1,2,3,4
145300	数据通信原理 Data Communication Principles	选 E	64		16		3.5	3	№1,2,3
145279	移动应用开发（Android）（Google） Mobile Application Development（Android）（Google）	选 E	48	16			2.5	3	№2,3
145286	WEB 程序设计（Google） Web Programming(Google)	选 E	48	16			2.5	4	№3,5
145273	高性能计算与云计算（Google, IBM） High Performance Computing and Cloud Computing (Google, IBM)	选 E	48	16			2.5	5	№3,4,5
145301	网络应用开发 Network Application Development	选 E	48	16			2.5	5	№3,5
145180	网络信息检索 Web information retrieval	选 E	48	16			2.5	6	№2,3
145276	物联网技术 Internet of Things Technology	选 E	32				2.0	7	№3,6,7
145146	计算机安全 Computer Security	选 E	48		16		2.5	7	№4,5,6,8
创新创业课									
120003	创新研究训练 Innovation Research Training	选 E	32				2.0		№4,12
120004	创新研究实践 I Innovation Research Practice 1	选 E	32				2.0		№4,12
120005	创新研究实践 II Innovation Research Practice 2	选 E	32				2.0		№4,12
120006	创业实践 Entrepreneurial Practice	选 E	32				2.0		№4,12

合 计 Total	必 C	0	0	0	0	0	0
	选 E	选修课修读最低要求 16.5 学分 minimum elective course credits required:16.5					

备注:

1.专业领域课中有三个模块课:人工智能模块课、多媒体模块课、软件开发模块。人工智能模块课包括:模式识别导论、数据仓库与数据挖掘、智能机器人技术、神经网络与深度学习;多媒体模块课包括:计算机图形学与虚拟现实、多媒体技术、数字图像处理;软件开发模块:软件设计与体系结构、开源技术及应用、大数据分析与应用、软件测试与质量保证。

2.专业领域课的选修:学生可以根据自己的兴趣,选修人工智能、多媒体、软件开发三个模块中的一个模块,每个模块必须选修不少于3门课程;在此基础上,选择其它模块或计算机学院其他专业的课程,最低要求16.5学分。

3.学生根据自己开展科研训练项目、学科竞赛、发表论文、获得专利和自主创业等情况申请折算为一定的专业选修课学分(创新研究训练、创新研究实践 I、创新研究实践 II、创业实践等创新创业课程)。每个学生累计申请为专业选修课总学分不超过4个学分。经学校批准认定为选修课学分的项目、竞赛等不再获得对应第二课堂的创新学分。

Remarks: computer-aided classes and lab are held at campus, while practice is held off-campus.

1. Specialty-related courses includes three modules: Artificial Intelligence, Multimedia and Software Development. The module of Artificial Intelligence includes Introduction to pattern Recognition, The Design and Analysis of Computer Algorithms, Intelligent Computer Technology. The module of Multimedia includes Computer Graphics, Multimedia Technology, Digital Image Processing. The module of Software Development includes Software Design and Architecture, Linux System and Network Management, Software Testing and Quality Assurance.

2. Specialty-related elective courses: students can choose to take one module courses out of that three modules, and after that they can take courses from other modules as well as other courses of computer school, which requires at least 17 credits.

3. The total accumulated credits of Innovation and Entrepreneurship Education for each student should not exceed 4 credits. Specifically,

- Students who preside over college students innovation and entrepreneurship training projects at school-level or above and are qualified to finish the project, can apply for taking "Innovation Research Training" course as a professional elective course(2 credits), and apply for taking the planning research project of Innovation Research Training as graduation design(thesis);
- Students who published one or more papers in core journals as the first author, can apply for taking "Innovation Research Practice 1" course as a professional elective course(2 credits);
- Students who obtained the inventive patent as main participant(top three), can apply for taking "Innovation Research Practice 2" course as a professional elective course(2 credits);
- Students who participated in independent entrepreneurship and won a prize at "Internet+" college students innovation and entrepreneurship competition, "Challenge Cup" series of competition or "youth" series contest at the provincial level or above, can apply for "Entrepreneurship Practice" course as a professional elective course(2 credits).

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 weeks Practice	授课 Hours Lecture			
106002	军训 Military Training	必 C	3周		3.0	1	№9
143197	马克思主义理论与实践 Marxism Theory and Practice	必 C	2周		2.0	假期	№8
145241	高级语言程序设计大作业 Advanced Language Programmer Course Design	必 C	2周		2.0	2	№3,5,9,10,11
130356	工程训练 I Engineering Training	必 C	2周		2.0	3	№1,2,5,9,10
145078	数据结构大作业 Data Structure Course Design	必 C	1周		1.0	4	№3,5,9,10,11
141073	电子工艺实习 II Practice of Electronic	必 C	2周		2.0	4	№1,2,5,9,10

145080	操作系统课程设计 Operating Systems Course Design	必 C	2周		2.0	5	№3,5,9,10,11
145242	软件工程课程设计 Software Engineering Course Design	必 C	2周		2.0	6	№3,5,9,10,11
145083	毕业实习 Graduation internship	必 C	8周		8.0	7	№6,8,9,10,11,12
145084	毕业设计 Graduation project	必 C	15周		15.0	8	№2,3,6,8,9,10,11,12
145283	数字系统创意设计(Google) Creative design of digital systems(Google)	选 C	2周		2.0	1	№3,5,9,10,11
145081	数据库课程设计 Database Course Design	选 C	2周		2.0	5	№3,5,9,10,11
145306	网络应用开发课程设计 Network Application Development Course Design	选 C	1周		1.0	6	№3,5,9,10,11
145243	计算机组成与体系结构课程设计 Computer Organization and Architecture Course Design	选E	2周		2.0	4	№3,5,9,10,11
145171	嵌入式系统课程设计 Embedded Systems Course Design	选E	2周		2.0	6	№3,5,9,10,11
合 计 Total		必 C	39周		39.0		
		选 E	选修课修读最低要求 2.0 学分 minimum elective course credits required:2				

五、第二课堂

第二课堂由人文素质教育和创新能力培养两部分组成。

1.人文素质教育基本要求

学生在取得专业教学计划规定学分的同时，还应结合自己的兴趣适当参加课外人文素质教育活动，参加活动的学分累计不少于 2 个学分。

2.创新能力培养基本要求

学生在取得本专业教学计划规定学分的同时，还必须参加国家创新创业训练计划或广东省创新创业训练计划或 SRP（学生研究计划）或百步梯攀登计划或一定时间的各类课外创新能力培养活动（如学科竞赛、学术讲座等），参加活动的学分累计不少于 4 个学分。

5.“Second Classroom” Activities

“Second Classroom” Activities are comprised of two parts, Humanities Quality Education and Innovative Ability Cultivation.

1)Basic Requirements of Humanities Quality Education

Besides gaining course credits listed in one’s subject teaching curriculum, a student is required to participate in extracurricular activities of Humanities Quality Education based on one’s interest, acquiring

no less than two credits.

2)Basic Requirements of Innovative Ability Cultivation

Besides gaining course credits listed in one's subject teaching curriculum, a student is required to participate in any one of the following activities: National Undergraduate Training Programs for Innovation and Entrepreneurship, Guangdong Undergraduate Training Programs for Innovation and Entrepreneurship, Student Research Program (SRP), One-hundred-steps Innovative Program, or any other extracurricular activities of Innovative Ability Cultivation that last a certain period of time (e.g. subject contests, academic lectures), acquiring no less than four credits.