

生物制药

Biopharmaceutics

专业代码: 083002T

学 制: 4 年

Program Code: 083002T

Duration: 4 years

培养目标:

培养具有良好的社会主义政治素质和道德修养, 德、智、技、体全面发展, 以生物科学、化学、工程学和药学为基础, 掌握扎实的生物化学、分子生物学、细胞工程、基因工程、发酵工程、生物制药工艺与设备、药物分析、药事管理、药品营销等的基本理论、知识与技能, 具有生物药物研发、生产过程与质量控制及生产管理等方面的创新研究和实际应用能力的高级技术开发和管理人才。

Educational Objectives:

The major aims to train the students to have a good socialist political quality and moral personality, master the solid theory, knowledge and skills in biochemistry, molecular biology, cell engineering, gene engineering, fermentation engineering, biopharmaceutical technology and equipment, biopharmaceutical analysis, biopharmaceutical administration and pharmaceutical marketing through learning biological sciences, chemistry, engineering and pharmacy and related courses. The students should finally become the talents with innovative research and practical application abilities in biopharmaceutical research and development, and biopharmaceutical manufacturing process and product quality control and production management.

毕业要求:

No1. 基础知识: 具有坚实的数学、生物学、药学和工程学专业基础理论和专门知识, 具有较强的基本实验技能, 并掌握一定的人文社科、经济管理等方面的基础知识。

No2. 问题分析: 能够应用生物制药技术的基本原理, 识别、表达、并通过文献研究分析生物制药领域复杂科学及工程问题, 以获得有效结论。

No3. 设计/开发解决方案: 能够设计针对复杂生物制药领域科学及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, 考虑安全、有效、社会、健康、法律、文化以及环境等因素。

No4. 研究: 能够基于科学原理及工程技术并采用科学方法对复杂生物制药的关键科学及工程问题进行研究, 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。

No5. 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。

No6. 工程与社会: 能够基于生物制药的科学和工程相关背景知识进行合理分析, 评价专业工程实

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。

№7. 环境和可持续发展：能够理解和评价针对复杂生物制药科学技术和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，能够在科学与工程实践中理解并遵守职业道德和规范，履行责任。

№9. 个人和团队：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。

№10. 沟通：能够就复杂生物制药科学和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：理解并掌握项目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. Basic Knowledge: To grasp the solid mathematics, biology, pharmacy fundamentals and engineering specialization, to have the experimental skills about biotechnology and pharmaceuticals, and to understand the basic knowledge on humanities & social sciences, and economic management.

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

№3. Design / Development Solutions: An ability to design solutions for complex biopharmaceutical engineering problems and innovatively design systems, components or process that meet specific needs with safety, effectivity, societal, public health, legal, cultural and environmental considerations.

№4. Research: An ability to conduct investigations of complex biopharmaceutical engineering problems based on scientifically biopharmaceutical 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 biopharmaceutical science and engineering 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 biopharmaceutical science and 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 science and 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 biopharmaceutical science and 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:

生物制药始建于2013年，依托华南理工大学生物学一级学科优势自设的特色专业。贯穿“秉承工科特色，加强理学研究”的办学理念，培养能适应现代化生物药物开发、生产与管理需要，掌握生物药物的研发、生产、质量控制、设备和流通管理等所必需的基本理论知识和实践创新能力的高级技术开发和管理人才。本专业师资力量雄厚。学院图书资料齐全，教学和科研平台先进，建立了“广东省生物医药前孵化器研究中心”、“合成生物学与药物制备教育部国际联合实验室”，组建了华南理工大学-中国科学院广州生物医药与健康研究院合办的“华南干细胞与再生医学英才班”对学生实施优才优育。毕业生能够在生物制药企业、生物工程公司、保健食品公司、生物药物研究所和卫生防疫、商检、药品监督检验、医药管理等部门以及工程设计院等从事生物药物、生物制品及各种生物工程产品的研究开发、分析检验、工艺工程设计和技术管理等工作，也可继续攻读研究生或到教育部门从事教学和科学研究。

Program Profile:

Biopharmaceutics was founded in 2012, relying on the South China University of Technology Department of biology subject characteristics of their own professional. With the "uphold the characteristics of engineering, to strengthen scientific research" school philosophy, train the students to meet the needs of modern biological drug development, production and management, master the basic theoretical knowledge necessary for the development, production, quality control, equipment and circulation management of biological drugs, and practical ability to innovate advanced technology development and management talent. The teachers are professional. There are 22 teachers and laboratory staffs, of which 17 with senior titles (6 doctoral tutor), 5 with intermediate title, of which 95 percent of them are doctoral degree holders, and 14 have background of training abroad. Biopharmaceutics is based on life science, medicine and engineering theory, to grasp the basic principles and regulations in the research and development, manufacture and circulation processes of biopharmaceuticals, with basic knowledge and expertise in biochemistry, molecular biology, cell engineering, fermentation engineering, bioseparation and analysis technology, pharmacy etc. The main task of the professional education is to provide the talents, technology,

products and services for biopharmaceutical companies, and the talents can work in the field of biopharmaceutical research, development, production and medical testing.

专业特色:

本专业特色体现在: 一、口径宽, 专业知识覆盖面广, 学习内容涵盖了药物研发、生产、控制与流通的各个环节; 二、具有药物研究与生产管理的双重能力; 三、具有一定的理学特色, 与新兴交叉领域结合紧密, 应变能力强。

Program Features:

The professional characteristics embodies in: (1) vast professional coverage. The students should grasp the basic theories which covers all fields of drug research and development, production, regulation and circulation; (2) to cultivate the students' ability in research and development, and drug production and management; (3) the profession has the characteristics of science and cultivates the students' strong adaptive capacity in work.

授予学位: 工学学士学位

Degree Conferred: Bachelor of Engineering

主干课程:

有机化学、化工原理、生物化学、分子生物学、微生物学、细胞生物学、生物制药工艺及设备、药物化学、药理学、药剂学。

Core Courses:

organic chemistry, chemical engineering, biochemistry, molecular biology, microbiology, cell biology, biopharmaceutical technology and equipment, medicinal chemistry, pharmacology, pharmacy

特色课程:

全英语教学课程: 生物化学、微生物学

双语教学课程: 酶工程、分子生物学、基因工程

研究型课程: 生物制药综合实验、自主科研训练

含新生研讨课: 当代科技与生物制药

校企合作课: 生物技术创新与创业

创新实践课程: 毕业设计, 自主科研训练

创业教育课程: 生物技术创新与创业

Featured Courses:

Courses Taught in English: Biochemistry; Microbiology

Bilingual Courses: Enzyme, Molecular Biology, Gene Engineering

Research Courses: Biopharmaceutical Comprehensive Experimental, Independent Research and Practice

Freshmen Seminars: Introduction to Biology and Biological Engineering; Contemporary Science and technology & Biopharmaceutics

Cooperative Courses with Enterprises: Biotechnology Innovation and Starting up Business

Innovation Practice: Graduation Thesis, Independent Research and Practice

Entrepreneurship Courses: Biotechnology Innovation and Starting up Business

一、教学计划总体安排表 (General Teaching Schedule)

学 年	学 期	教 学 进 度 安 排 (周)																		理 论 教 学	考 试	入 学 教 育	军 训	课 程 设 计	大 作 业	工 程 训 练	电 子 实 验	综 合 实 践	社 会 实 习	生 产 实 习	毕 业 实 习	其 它 实 习	中 外 合 作 项 目	毕 业 设 计	就 业 安 排	机 动	假 期	小 计								
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18																				19	20						
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R																											
一	1		C	A	A	A	A	A	A	A	A	A	A	A	A	A	B	D	D	D	14	1	1	3																19						
	2	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	18	2																		20						
二	3	I	I	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	16	2					2													20						
	4	G	G	I	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	15	2				2		1													20					
三	5	K	I	I	E	E	A	A	A	A	A	A	A	A	A	A	A	A	B	B	13	2		2			2		1												20					
	6	E	E	I	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	15	2		2				1														20				
四	7	L	L	L	L	I	I	A	A	A	A	A	A	A	A	A	A	A	B	B	12	2					2											4				20				
	8	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	P	P	Q	Q																	15	2	3				20			
		合 计 (周)																		103	13	1	3	4		2		7		2	4									15	2	3				159

二、各类课程学分登记表 (Registration Form of Curriculum Credits)

1. 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	60.0	924	
	通识 General Education	10.0	160	
学科基础课 Disciplinary Basic Courses	必修 Compulsory	42.5	794	
	选修 Elective	2.0	32	
专业领域课 Specialty-related Courses	必修 Compulsory	15.5	272	
	选修 Elective	7.0	112	
合 计 Total		137.0	2294	
集中实践教学环节 (周) Practice Training (Weeks)	必修 Compulsory	39.0	39 周	
毕业学分要求 Credits Required for Graduation	137.0 + 39.0 = 176.0			

备注：学生在取得专业教学计划规定学分的同时，还必须取得第二课堂 2 个人文素质教育学分和 4 个创新能力培养学分。

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
2294	1990	304	1820	474	176	157	19	39	122	15	15

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-aided 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	7	№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
	145223	大学计算机基础 Foundations of Computer		32				2.0	1	№5
	145268	C++程序设计基础 C++ Programming Foundations		48				3.0	2	№5
	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
	140189	微积分 I (一) Calculus (1)		80				5.0	1	№1
	140190	微积分 I (二) Calculus (2)		64				4.0	2	№1
	141001	大学物理 I (一) General Physics (1)		48				3.0	2	№1
	141002	大学物理 I (二) General Physics (2)		48				3.0	3	№1
	141007	大学物理实验 (一) Physics Experiment (1)		32		32		1.0	2	№1
	141008	大学物理实验 (二) Physics Experiment (2)		32		32		1.0	3	№1
	140197	线性代数与解析几何 Linear Algebra & Analytic Geometry		48				3.0	1	№1
	140019	概率论与数理统计 Probability & Mathematical Statistics		48				3.0	2	№1
	130139	工程制图 (一) Engineering Drawing (1)		48				3.0	1	№1,2,3,4,6

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 Hours			
	130140	工程制图（二） Engineering Drawing (2)		32				2.0	2	№1,2,3,4,6
		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			1084		64	128	70.0		

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 Hours			
学科基础课 Disciplinary Basic Courses	147001	无机化学 I Inorganic Chemistry	必 C	32				2.0	1	№1
	147034	无机化学实验(工科) 一 Experiment of Inorganic Chemistry (1)	必 C	16		16		0.5	1	№1
	147035	无机化学实验（工科）二 Experiment of Inorganic Chemistry (2)	必 C	16		16		0.5	2	№1
	147020	有机化学 I Organic Chemistry	必 C	48				3.0	2	№1
	147007	有机化学实验 I Organic Chemistry Experiments	必 C	32		32		1.0	3	№1
	147008	分析化学 I Analytical Chemistry	必 C	32				2.0	3	№1
	147013	分析化学实验 II Analytical Chemistry Experiment	必 C	32		32		1.0	3	№1
	147058	物理化学 I Physical Chemistry	必 C	48				3.0	4	№1
	147055	物理化学实验 II Physical Chemistry Experiments	必 C	32		32		1.0	5	№1
	130083	机械设计基础 Basic of Mechanical Design	必 C	48				3.0	5	№1,2,3,4,6
	130310	机械基础综合实验 I Poly-experiment of Mechanical Fundamentals	必 C	10		10		0.5	5	№1,2,6,7,11

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-a ided Class Hours	实验 Lab Hours	实践 Practice				
	137036	流体力学与传热III Fluid Mechanics and Heat Transfer	必 C	56				3.5	5	№1,2,3,4,6	
	170013	传质与分离工程III Mass Transfer and Separation Processes	必 C	48				3.0	6	№1,2,3,4,6	
	137063	化工原理实验（一） Experiment of Chemical Engineering Principles (1)	必 C	16		16		0.5	5	№1,2,6,7,11	
	137064	化工原理实验（二） Experiment of Chemical Engineering Principles (2)	必 C	16		16		0.5	6	№1,2,6,7,11	
	170196	生物科学与工程概论 Introduction to Biology and Bioengineering	必 C	32				2.0	1	№1,5-,8,10,1 2	
	170205	生物化学 III BioChemistry III	必 C	32				2.0	3	№1	
	170100	生物化学实验 Experiment of Biochemistry	必 C	32		32		1.0	3	№1	
	170009	现代工业微生物学 I Modern Industry Microbiology	必 C	56				3.5	4	№1	
	170010	微生物学实验 Microbiology Experiments	必 C	32		32		1.0	4	№1	
	137003	药物化学 Medicinal Chemistry	必 C	48				3.0	3	№1	
	170113	药理学 Pharmacology	必 C	48				3.0	4	№1	
	170148	药剂学 Pharmaceutics	必 C	32				2.0	6	№1	
	170141	发酵工程 Fermentation Engineering	选 E	32				2.0	5	№1	
	170136	免疫学 Immunology	选 E	32				2.0	5	№1	
		合计 Total		必 C	794		234		42.5		
				选 E	选修课修读最低要求 2.0 学分 minimum elective course credits required:2						
Specialty- related	170261	生物制药工艺及设备 Biopharmaceutical Process & equipment	必 C	64		32		3.0	6	№1-4,6,12	
	137012	药物分析 Pharmaceutical Analysis	必 C	32				2.0	5	№1	

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-a ided Class Hours	实验 Lab Hours	实践 Practice			
				170225	生物分离工程 Bioseparation Engineering	必 C	32			
170026	细胞生物学 Cell Biology	必 C	32				2.0	4	№1	
170101	分子生物学 Molecular Biology	必 C	32				2.0	4	№1	
170017	基因工程 Gene Engineering	必 C	32				2.0	5	№1	
170222	现代生物分析仪器原理与实验 Modern Analytical Instruments: Principles and Applications	必 C	48			16	2.5	6	№1,2,4,6,12	
170105	细胞生物学实验 Cell biology Experiment of	选 E	32			32	1.0	4	№1,2,4,6,12	
170200	生理学 Physiology	选 E	32				2.0	3	№1	
170201	生理学实验 Physiology Experiments	选 E	32			32	1.0	3	№1	
137009	新药研究与开发 R & D for New Drug	选 E	32				2.0	6	№1-,4,6,7	
170018	酶工程 Enzyme Engineering	选 E	32				2.0	5	№1	
170240	合成生物学导论 Introduction to Synthetic Biology	选 E	32				2	4	№1,12	
170221	生物技术创新与创业 Innovation & Entrepreneurship in Biotechnology	选 E	32				2.0	3	№6,8,11,12	
170034	药事管理 Pharmacy Administration	选 E	16				1.0	7	№1,11	
170229	有机波谱分析 Spectroscopy in Organic Structure Analysis	选 E	32				2.0	7	№1,2,4,5,6,7	
170231	药品营销学 Drug Marketing	选 E	16				1.0	7	№1,8,11	
170147	细胞工程 Cell Engineering	选 E	32				2.0	4	№1	
170245	科技论文写作 Scientific Writing	选 E	16				1.0	6	№1,10	
170262	纳米医药学 Nanopharmacy	选 E	32				2.0	6	№1,2,3,6,10	
合计 Total			必 C	272		48	15.5			
			选 E	选修课修读最低要求 7.0 学分 minimum elective course credits required:10						

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 Practice weeks	授课 Lecture Hours			
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
130356	工程训练 I Metalworking Practice I	必 C	2 周		2.0	4	№2,3,4,6,11
170046	生产实习 Manufactural Practice	必 C	1 周		1.0	5	№2, 3, 6, 11
170086	毕业实习 Practice on Diploma Project	必 C	4 周		4.0	7	№2, 3, 6, 8, 9, 10, 11
130195	机械设计基础课程设计 Course Project of the Basis of Mechanical Design	必 C	2 周		2.0	5	№1-11
147076	化工原理课程设计 Chemical Engineering Design Course	必 C	2 周		2.0	6	№1-11
137074	生物制药综合性实验 Biopharmaceutical Comprehensive Experiment	必 C	2 周		2.0	7	№1-12
170259	基因工程实验 Genetic Engineering Experiments	必 C	1 周		1.0	5	№1,2,4,6,12
137056	文献检索与实践 Literature Search and Practice	必 C	1 周	8	1.0	3	№1, 5, 11
170087	毕业设计 Diploma Project	必 C	15 周		15.0	8	№1-12
170247	自主科研训练 Independent Research and Practice	必 C	4 周		4.0	3-6	№1-12
合 计 Total		必 C	39 周		39.0		
		选 E	选修课修读最低要求 0 学分 minimum elective course credits required:				

备注：自主科研训练课程的修读及学分获得可以采用两种方式，1) 参考本课程大纲，选取模块进入本科导师实验室开展科研训练，按大纲要求考核合格获得 4 学分；2) 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 4 学分自主科研训练课程（具体方法依据学校对创新研究训练（120003）、创新研究实践 I（120004）、创新研究实践 II（120005）、创业实践（120006）等创新创业课程的学分获得规定）。学生此部分获得的学分不得再计入第二课堂学分。

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.