

# 食品科学与工程

## Food Science and Engineering

专业代码：082701

学 制：4 年

Program Code: 082701

Duration: 4 years

### 培养目标：

培养学生具有社会主义核心价值观、强烈的社会责任感，具有宽厚的知识基础和较强的创新实践能力，具有国际化视野和终身学习能力，具备成为食品科学与工程行业的精英或领军人物的潜力和基础。

### Educational Objectives:

Aim at cultivating students with core socialist values, strong social responsibility, having a broad knowledge and strong ability of innovation practice, with international vision and lifelong learning ability, with the potential and foundation to become the leader and elite of in the field of food science and engineering.

### 毕业要求：

№1.工程知识：掌握扎实的基础知识、专业基本原理、方法和手段，能够将数学、自然科学、食品专业基础和专业知识用于解决食品工程复杂问题。

№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、方法和手段，识别、表达、并通过文献研究分析食品工程复杂问题，以获得有效结论。

№3.设计/开发解决方案：能够设计针对食品工程复杂问题的解决方案，设计满足特定需求的食品系统、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食品工程复杂问题进行研究，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：能够针对食品工程复杂问题，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，包括对食品工程复杂问题的预测与模拟，并能够理解其局限性。

№6.工程与社会：能够基于食品工程相关背景知识进行合理分析，评价食品工程实践和食品工程复杂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食品工程复杂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，能够在食品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：能够就食品工程复杂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：理解并掌握食品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 food engineering problems.

№2.Problem Analysis: An ability to identify, formulate and analyze complex food 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 food 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 food 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 food 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 food engineering practice.

№7.Environment and Sustainable Development: An ability to understand and evaluate the impact of professional food 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 food 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 food 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 food engineering management principles and methods of economic decision-making, to function in multidisciplinary environments.

№12.Lifelong Learning: 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:**

食品科学与工程专业依托食品科学与工程一级学科，是国家级特色专业。始建于 1952 年，于 2009 年、2012 年、2015 年通过教育部工程教育本科专业认证。重点培养学生具有宽厚的知识基础和较强的创新实践能力，具有国际化视野和终身学习能力，具备成为食品科学与工程行业的精英或领军人物的潜力和基础。本专业拥有雄厚的师资力量和丰富的实验实习平台，有坚实的学科基础支撑，所在食品科学与工程学院拥有食品营养与健康学科创新引智基地、小麦与玉米深加工国家工程实验室（共建）、淀粉与植物蛋白教育部工程研究中心、广东省天然产物绿色加工与产品安全重点实验室、广东省食品绿色加工与营养调控工程技术研究中心、广东省脂类科学与应用工程技术研究中心、广东省冷链食品智能感知与过程控制工程技术研究中心、广东省糖品绿色加工国际合作研发中心、农产品资源绿色加工广东普通高校重点实验室和国家实验教学示范中心等一批教学和科研基地。本专业有 3000 平方米的本科实验教学场地，实验仪器设备总值逾数千万元。同时本专业与校外企事业单位建立逾五十个本科实习实践基地。

### **Program Profile:**

The major Food Science and Engineering belongs to the first level national key discipline, Food science and engineering. Its history can be dated back to 1952. It got the accreditation from China Engineering Education Accreditation Association in 2009, 2012 and 2015. The major aims at cultivating students with core socialist values, strong social responsibility, having a broad knowledge and strong ability of innovation practice, with international vision and lifelong learning ability, with the potential and foundation to become the leader and elite of in the field of food science and engineering. The School of Food Science and Engineering is one of the most important units in the University featuring high-level innovative scientific research. The School has a national engineering research center (Wheat and Corn Processing Lab), a national innovation and technology platform (Starch and Plant Proteins Research Center) and several provincial/ministry scientific research institutes, such as Guangdong Key Laboratory for Green Processing and Safety of Natural Products, Guangdong Technical Center for Food Processing and Nutrition, Guangdong Lipid Science and Applied Technology Center, Guangdong International Collaborate Center for Sugar Green Processing, Agricultural Products Green Processing Lab and Demonstration Center, etc. The major Food Science and Engineering has laboratory for undergraduate students at around 3000 M<sup>2</sup>, equipped with specific instruments worth over millions dollars. The major has established qualified practice bases outside the school to facilitate the practical teaching.

### **专业特色:**

国家级特色专业，所在食品科学与工程学科为国家重点学科，综合实力排名国内前三甲。专业按照国际工程认证标准设置课程体系，坚持“厚基础、重实践”理念，注重多学科的教学和实践与

成功技能的培养，学生宽口径就业。

### **Program Features:**

The major Food Science and Engineering is a featured specialty at national level. It belongs to the first level national key discipline, Food science and engineering, which ranks top three in China. Its teaching plan is set up in accordance with the international engineering certification standards. Based on the concept of wide foundation and constant practice, it pays attention to cultivate students with professional knowledge as well as the ability of communication, innovation and lifelong learning.

**授予学位：**工学学士学位

**Degree Conferred:** Bachelor of Engineering

### **主干课程：**

食品生物化学、食品微生物学、食品化学、食品分析、食品毒理学、食品加工安全控制、食品营养与卫生学、食品工艺学、食品加工与保藏原理、食品加工机械与设备、食品工厂设计概论。

### **Core Courses:**

Food Biochemistry, Food Microbiology, Food Chemistry, Food Analysis, Food Safety, Food Nutrition, Food Processing Technology, The Principles of Food Processing and Preservation, Food Processing Machinery and Equipment, Design of Food Factory

### **特色课程：**

新生研讨课：现代食品杀菌技术，生命、饮食、健康，食品的消化道之旅

全英语教学课程：食品生物化学、食品微生物学、食品质量管理、食品分子生物学、食品有害微生物控制技术

双语教学课程：食品生物化学、食品加工与保藏原理、食品分析

研究型课程：食品生物化学实验、食品加工与保藏原理实验

MOOC：食品加工与保藏原理、食品生物化学、食品分析

创新实践课程：食品微生物学实验、食品生物化学实验、食品分析实验、食品加工与保藏原理实验

创业教育课程：食品质量管理、行业专家讲座（课外）

### **Featured Courses:**

Freshmen Seminars: Modern Food Sterilization Technology, Life-Food-Diet, The Journey through the Digestive Tract

Courses Taught in English: Food Biochemistry, Food Microbiology, Food Quality Management, Food Molecular Biology, Technology of Controlling the harmful Microorganism in Food

Bilingual Courses: Food Biochemistry, The Principles of Food Processing and Preservation, Food Analysis

Research Courses: Experiments of Food Biochemistry, Experiments on Principles of Food Processing and Preservation

MOOC: Food Biochemistry, The Principles of Food Processing and Preservation, Food Analysis

Innovation Practice: Experiments of Food Microbiology, Experiments of Food Biochemistry, Experiments of Food Inspection and Analysis, Experiments on Principles of Food Processing and Preservation

Entrepreneurship Courses: Seminars by entrepreneurs

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

学 年 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 习	综 合 实 验	社 会 实 践	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	D	14	1	1	3												19					
	2	A	A	A	A	A	A	A	A	A	A	A	A	A	A	Q	Q	B	B	B	16	2												2		20					
二	3	A	A	A	A	A	A	A	A	A	A	A	A	A	A	Q	Q	B	B	16	2					1									20						
	4	A	A	A	A	A	A	A	A	A	A	A	A	A	A	G	G	B	B	16	2				2											20					
三	5	A	A	A	A	A	A	A	A	A	A	A	A	H	E	E	K	K	B	B	13	2			2		1			2						20					
	6	A	A	A	A	A	A	A	A	A	A	A	A	A	A	E	E	B	B	16	2			2												20					
四	7	A	A	A	A	A	A	A	A	A	A	A	A	L	L	L	L	B	B	14	2								4							20					
	8	O	O	O	O	O	O	O	O	O	O	O	O	O	O	P	P	P	Q	Q												15	3	2			20				
合 计 (周)																					105	13	1	3	4		2	1	1		2	4					15	3	4		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	57.0	876	
	通识 General Education	10.0	160	
学科基础课 Disciplinary Basic Courses	必修 Compulsory	60.0	1120	
	选修 Elective	0.0	0	
专业领域课 Specialty-related Courses	必修 Compulsory	0.0	0	
	选修 Elective	9.0	144	
合 计 Total		136.0	2300	
集中实践教学环节 (周) Practice Training (Weeks)	必修 Compulsory	35.0	35 周	
毕业学分要求 Credits Required for Graduation	136.0+35.0=171.0 171 (Compulsory 152, Elective 9.0, General Education 10.0)			

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
2300	1996	304	1763	537	171	152	19	35	119	17	8

### 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)				2.5	1	№8		
	143091	中国近现代史纲要 Skeleton of Chinese Modern History		(32) 24				2.0	2	№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	3	№8		
	143090	马克思主义基本原理 Fundamentals of Marxism Principle		(40) 36				2.5	4	№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		
	145223	大学计算机基础 Foundations of Computer		32				2.0	1	№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	№1,2,4		
	140190	微积分 I (二) Calculus (2)		64				4.0	2	№1,2,4		
	140197	线性代数与解析几何 Linear Algebra & Analytic Geometry		48				3.0	1	№1,5,7		
	140019	概率论与数理统计 Probability & Mathematical Statistics		48				3.0	2	№2,4,5		
	141001	大学物理 I (一) General Physics (1)		48				3.0	2	№1,4		
	141002	大学物理 I (二) General Physics (2)		48				3.0	3	№1,4		
	141007	大学物理实验 (一) Physics Experiment (1)		32		32		1.0	2	№4,7		
	141008	大学物理实验 (二) Physics Experiment (2)		32		32		1.0	3	№4,7		
	130139	工程制图 (一) Engineering Drawing (1)		48				3.0	1	№1,5,10		
	130140	工程制图 (二) Engineering Drawing (2)		32				2.0	2	№1,5,10		
				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
				<b>合计 Total</b>		1036		64	128	67.0		



### 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			
学科基础课 Disciplinary Basic Courses	147001	无机化学 I Inorganic Chemistry	必 C	32			2.0	1	№1,4
	147034	无机化学实验 (工科) (一) Experiment of Inorganic Chemistry (1)	必 C	16		16	0.5	1	№1,4
	147035	无机化学实验 (工科) (二) Experiment of Inorganic Chemistry (2)	必 C	16		16	0.5	2	№1,4
	147020	有机化学 I Organic Chemistry	必 C	48			3.0	2	№1,4
	147007	有机化学实验 I Organic Chemistry Experiment	必 C	32		32	1.0	2	№1,4
	147008	分析化学 I Analytical Chemistry	必 C	32			2.0	3	№1,2
	147013	分析化学实验 II Analytical Chemistry Experiment	必 C	32		32	1.0	3	№2,4,6
	147058	物理化学 I Physical Chemistry	必 C	48			3.0	4	№1,3
	147055	物理化学实验 II Physical Chemistry Experiment	必 C	32		32	1.0	5	№1,3,4
	135092	电工与电子技术 II Electrical Engineering and Electrontechnics	必 C	64			4.0	4	№1,7
	135081	电工与电子技术实验 Experiment of Electrical Engineering and Electrontechnics	必 C	24		24	1.0	5	№2,4
	130083	机械设计基础 Basis of Mechanical Design	必 C	48			3.0	5	№1,3,5
	130311	机械基础综合实验 II Poly-experiment of Mechanical Fundamentals	必 C	16		16	0.5	5	№1,7
	136115	流体力学与传热 II Fluid Mechanics and Heat Transfer	必 C	48			3.0	5	№1,3
	137021	传质与分离工程 II Mass Transfer and Separation Processes	必 C	40			2.5	6	№1,3
	137063	化工原理实验 (一) Experiment of Chemical Engineering Principles (1)	必 C	16		16	0.5	5	№3,4,6
	137064	化工原理实验 (二) Experiment of Chemical Engineering Principles (2)	必 C	16		16	0.5	6	№3,4,6
	139072	食品科学与工程导论 Introduction to food science and Engineering	必 C	16			1.0	1	№1,4,12
	139003	食品微生物学 Food Microbiology	必 C	40			2.5	3	№3,4,6
	139029	食品微生物学实验 Food Microbiology Experiment	必 C	32		32	1.0	3	№3,4,6
	139009	食品营养与卫生学 Food Nutrition & Hygiene	必 C	24			1.5	3	№6
	139010	食品化学 Food Chemistry	必 C	32			2.0	3	№2,3,6,8,9,10,12
	139004	食品生物化学 Food Biochemistry	必 C	56			3.5	4	№2,4,5,9,12

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
				139028	食品生物化学实验 Experiments of Food Biochemistry	必 C				32
139032	食品毒理学 Food Toxicology	必 C	24				1.5	4	№1,2,3,4,6,7	
139001	食品分析 Food Analysis	必 C	32				2.0	5	№1,2,4,5,12	
139093	食品分析实验 Experiments of Food Analysis	必 C	32		32		1.0	4/5	№1,2,4,6,8,9	
139113	食品加工机械与设备 Food Processing Machinery and Equipment	必 C	40		9		2.5	6	№1,2,3,4,5	
139048	食品加工安全控制 Food Processing and Safety Control	必 C	24				1.5	7	№1,2,3,4,5	
139094	食品工艺学 Food Technology	必 C	(36) 32				2.0	7	№1,2,3,4,5	
139005	食品加工与保藏原理 The Principles of Food Processing and Preservation	必 C	64				4.0	6	№1,2,3,4,5	
139031	食品加工与保藏原理实验 Experiments on Principles of Food Processing and Preservation	必 C	32		32		1.0	6	№1,2,3,4,5	
139014	计算机在食品工程中的应用 Application in Food Engineering of Computer	必 C	24	8			1.5	6	№1,2,4,5	
139019	食品工厂设计概论 Design of Food Factory	必 C	24				1.5	7	№1,2,3,4,5	
139104	现代食品杀菌技术 Modern Food Sterilization Technology	选 E	32				2.0	1	№1,2,4,5,12	
139105	生命、饮食、健康 Life Food Diet	选 E	32				2.0	1	№12	
139109	食品的消化道之旅 The Journey through the Digestive Tract	选 E	32				2.0	1/2	№2,4,5,9,10,12	
<b>合计 Total</b>			必 C	1120	8	337		60.0		
			选 E	选修课修读最低要求 0.0 学分 Minimum elective course credits required: 0.0						
专业领域课 Specialty-related Courses	专业限选课									
	139015	科研方法与论文写作 Research Method & Thesis Writing	选 E	16				1.0	3	№2,4,10
	139007	食品标准与法规 Food Standard and Regulation	选 E	16				1.0	4	№8,10,12
	模块 1: 食品生物技术									
	139112	食品酶工程 Food Enzyme Engineering	选 E	16				1.0	4	№2,6,8,9,10,12
	139033	食品生物技术 Food Biotechnology	选 E	24				1.5	5	№1,2,3,4,5
	139022	食品添加剂 Food Additive	选 E	24				1.5	6	№2,3,6,8,9,10,12
	模块 2: 食品工程									
	139039	食品现代仪器分析 Modern Instrumental Analysis of Foods	选 E	24				1.5	4	№1,2,3,4,5

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
				139068	食品包装技术 Food Packaging Technology	选 E				16
139036	食品物性学 Physical Properties of Foods	选 E	24				1.5	6	№1,2,3,4,5,6	
模块 3: 食品营养健康										
139102	营养工程学 Nutrition Engineering	选 E	24				1.5	4	№1,2,3,4,6,10,12	
139101	生命周期营养 Nutrition in the Life Span	选 E	16				1.0	5	№1,2,3,4,5	
139100	膳食疗养学 Nutrition Therapy	选 E	24				1.5	6	№2,4,10,12	
专业任选课										
139002	调味品与感官分析 Food Condiments and Sensory Evaluation	选 E	24		12		1.0	7	№4,8,9,10,12	
139038	食品有害微生物控制技术 Technology of Controlling the Harmful Microorganism in Food	选 E	24				1.5	7	№2,3,4,6	
139024	食品质量管理 Food Quality Management	选 E	32				2.0	7	№1,2,3,4,5,8,10,12	
139053	食品免疫学与技术 Food Immunology and Technology	选 E	24				1.5	7	№1,4,5,6,12	
139110	食品分子生物学 Food Molecular Biology	选 E	32				2.0	7	№2,4,5	
139056	化工仪表与自动化 Instrumentation and Automation of Chemical Engineering	选 E	16				1.0	7	№1,2,3,4,6	
139050	功能性食品 Functional Food	选 E	16				1.0	7	№2,4,6	
139103	食品科学外专课程 Food Science and Technology Seminar by Foreign Specialist	选 E	16				1.0	7	№2,4,5,8,10,12	
120003	创新研究训练 Innovation Research Training	选 E	32				2.0		№2,3,4	
120004	创新研究实践 I Innovation Research Practice I	选 E	32				2.0		№2,3,4	
120005	创新研究实践 II Innovation Research Practice II	选 E	32				2.0		№2,3,4	
120006	创业实践 Entrepreneurial Practice	选 E	32				2.0		№2,3,4	
<b>合计 Total</b>			必 C	0	0	0	0			
			选 E	选修课修读最低要求 9.0 学分 Minimum elective course credits required: 9.0						

备注：1.3 个模块任选 1 个，专业任选课和其它模块中课程任选 2 门以上。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。

#### 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 Engineering Training	必 C	2 周		2.0	4	№1,2,3,4,5
139062	生产实习 Visit Practice	必 C	2 周		2.0	4	№1,2,3,4,5,6
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	№1,2,3,4,5
141075	电子工艺实习 I Practice of Electronic	必 C	1 周		1.0	5	№1,2,3,4,5
147076	化工原理课程设计 Course Design for Chemical Engineering Principle	必 C	2 周		2.0	6	№1,2,3,4,5
139064	毕业实习 Graduation Practice	必 C	4 周		4.0	7	№1,2,3,4,5,6
139114	食品工厂设计训练 Food Factory Design Training	必 C	2 周		2.0	7	№1,3,5,6,7,9,11
139066	毕业设计(论文) Graduation Design (Theses)	必 C	15 周		15.0	7-8	№1,2,3,4,5,6,10
<b>合计 Total</b>		必 C	35		35.0		
		选 E	选修课修读最低要求 0 学分 minimum elective course credits required: 0				

#### 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.