

能源与动力工程

Energy & Power Engineering

专业代码: 080501

学制: 4年

Program Code: 080501

Duration: 4 years

培养目标:

培养热爱祖国, 坚持社会主义道路, 适应经济、科技、社会发展需要, 德智体全面发展, 具有扎实和宽广的能源与动力工程及相关领域基础理论和专业知识、突出的创新精神、创业意识与综合素质、较高的外语水平以及较强的计算机操作应用的高级工程技术、科研和管理人才。毕业后能够在能源、动力、环保等领域从事科学研究、技术开发、规划、设计制造、运行控制、教学和管理等工作的应用型高级专门人才, 并具备终身学习的能力。培养学生的知识和能力具有全国一流水平, 能适应国家重大经济需求, 同时具有一定的国际视野和国际交流能力。

Educational Objectives:

To cultivate the advanced personnel of engineering, research and management who love the motherland, adhere to the socialist road, meet the need of economic, technological and social development with moral and physical health, a good grounding in basic theory and professional knowledge, innovative spirit, entrepreneurial awareness and comprehensive quality, high level of English proficiency, as well as computer operation skills. Graduates can engaged in scientific research, technology development, planning, design & manufacture, operation and control, teaching, management, and other works of the application of senior professionals in the energy, power engineering, environment and related fields, and have the ability of lifelong learning. The students' knowledge and ability reaches a national first-class level, can adapt to the major economic needs of China, and also possess a certain international perspective and communication skill.

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、本专业基础知识和专业知识用于解决复杂工程问题, 并接触和掌握能源与动力工程行业部分营运知识, 为解决企业能源与动力工程实际复杂问题打下知识基础。

№2.问题分析: 能够应用数学、自然科学、本专业基本原理、方法和手段和能源与动力工程行业营运知识, 识别、表达并通过文献研究分析能源与动力工程中的复杂问题, 以获得有效结论。

№3.设计/开发解决方案: 能够针对能源与动力工程的复杂问题设计解决方案, 设计满足特定需求的能源与动力系统、单元(部件)、工艺流程和节能减排的技术方案, 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、节能以及环境等因素。

№4.研究: 能够基于科学原理并采用科学方法对能源与动力工程复杂问题进行研究, 包括设计实

验、分析与计算，并通过信息综合得到合理有效的结论，能够创造性地利用能源与动力工程基本原理解决实践和工业需求问题。

№5.使用现代工具：能够针对能源与动力工程复杂问题，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，包括应用能量传递、转换和利用技术对能源与动力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：能够基于能源与动力工程相关背景知识进行合理分析，评价能源与动力工程实践和能源与动力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能源与动力工程复杂问题的工程实践对节能、环境和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：能够就能源与动力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。具备一定的国际视野，能够在全球化的跨文化背景和环境里保持清晰意识，能有效沟通和交流，有竞争力地、负责任地行使自己的职责。

№11.项目管理：理解并掌握能源与动力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：能够胜任相关单位从事研究、规划、及技术改进、设计、施工和运行管理工作，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:** Master the basic knowledge, professional basic principles, methods and means, and apply mathematics, natural sciences, the basic knowledge and expertise to solve complex engineering problems, and contact and master the operational knowledge in energy and power engineering industry. Build the knowledge base to solve practical knowledge of problems of energy and power engineering in enterprises.

№2. **Problem analysis:** Able to use mathematics, natural science, the basic principles of the professional methods and means and energy and power engineering industry operational knowledge, identify, express and review literature to analyze power engineering complex issues in order to obtain effective conclusions.

№3. **Design/Development Solution:** Able to design solutions for complex problems in energy and power engineering, design energy and power systems, units (components), process flow and energy saving and emission reduction solutions that meet specific needs and being able to embody the innovative sense, taking into account social, health, safety, legal, cultural, energy saving and environmental factors.

№4. **Research:** Able to study the complex problems of energy and power engineering based on scientific principles and scientific methods, including designing experiments, analysis and calculation, and obtaining

reasonable and effective conclusions through information synthesis, and can creatively use the basic principles of energy and power engineering to solve the practice and industrial demand problems.

№5. **The use of modern tools:** Develop and select appropriate technologies, resources, modern engineering tools and information technology tools for energy and power engineering complex issues, including the application of energy transfer, conversion and utilization technologies to predict and simulate complex issues of energy and power engineering, and could understand its limitations.

№6. **Engineering and society:** Able to conduct a reasonable analysis of energy and power engineering practice and energy and power engineering complex problem solutions on social, health, safety, legal and cultural impact based on energy and power engineering background knowledge, and understand the responsibility should be borne.

№7. **Environment and sustainable development:** Able to understand and evaluate the impact of engineering practice dealt with energy and power engineering complex issues on energy conservation, environment and social sustainable development.

№8. **Professional norms:** With humanities and social science literacy, the sense of social responsibility, able to understand and comply with professional ethics and norms engineering in practice as well as fulfill their responsibilities.

№9. **Individuals and Teams:** Able to take on different roles including individual, team members and director in a multidisciplinary team.

№10. **Communication:** Able to communicate and communicate effectively with industry peers and the public on complex issues in energy and power engineering field, including writing reports and designing manuscripts, presenting statements, clearly expressing or responding to directives. Have a certain international perspective, be able to maintain a clear sense in a global cross-cultural background and environment and effective communication, competitively and responsibly exercise their duties.

№11. **Project management:** Understand and master the principles of energy and power engineering management and economic decision-making methods, and apply them in a multi-disciplinary environment.

№12. **Lifelong learning:** Able to work for the relevant units engaged in research, planning, and technical improvement, design, construction and operation management, with independent learning and lifelong learning awareness, have the ability to continue to learn and adapt to development.

专业简介:

能源与动力工程专业自 1985 年创办, 已有 30 多年的办学历史, 先后为国家培养了相关领域高级技术人才 1500 余人。师资队伍结构合理、学术水平较高、科研实力较强。教师队伍中有双聘院士 1 人, “长江学者奖励计划”特聘教授 1 人, 教育部“新世纪优秀人才支持计划”1 人。

本专业为广东省重点学科和优势重点学科, 拥有一级学科硕士学位授权点和“博士后”流动站, 二级学科博士学位授权点, 已形成学士-硕士-博士完整的人才培养体系。拥有广东省能源高效清洁利用重点实验室、广东省能源高效低污染转化工程技术研究中心、能源高效清洁利用广东普通高校

重点实验室和华南理工大学能源洁净利用研究所，为学生实验教学和参与科研活动提供了高水平的平台。

目前与企业联合共建 20 多个产学研实践教学和实习基地。与美国、英国、法国和澳大利亚等国家的多所知名高校签订了本硕博各个层面的联合培养项目。还有与国内外多所知名高校的短期交换生项目。

Program Profile:

The specialty Energy and Power Engineering established in 1985 and has more than 30 years history. It has cultivated more than 1,500 alumni in the relevant areas. It employs 1 double-engaged academician of China Academy of Sciences and China Academy of Engineering, 1 Cheung Kong scholar. Under the leadership of the domestic well-known experts, the overall strength of the faculty is at an advanced level in China.

The specialty is the key disciplines and advantage of key disciplines in Guangdong Province. It has a master's degree authorization and "postdoctoral" station in level I, the doctorate degree in level II. It has formed a complete expert training system from the bachelor, master to doctor degrees. It also has a Guangdong Energy Efficient and Clean Utilization Key Laboratory, Guangdong Province Engineering Research Center of High Efficiency and Low Pollution Energy Conversion, Guangdong University Key Laboratory of Energy Efficient and Clean Utilization and South China University Technology Energy Clean Utilization Research Institute, and can be provided for the teaching and research of undergraduates.

There are more than 20 production-learning-research integration bases outside the campus. Joint degree programs for students are established with many prestigious universities in the United States, the United Kingdom, France and Australia and so on. In addition, short-term exchange student programs are established with many well-known universities in mainland China, Hong Kong, Macao, Taiwan and abroad.

专业特色:

依托省重点实验室和省工程技术研究中心，为学生教学、科研、实践和国际交流提供了良好的平台，形成产学研和国际化的培养模式。在相关领域特别是电厂热能动力系统与制冷空调技术教学水平位居华南地区领先水平。

Program Features:

Based on Guangdong Energy Efficient and Clean Utilization Key Laboratory, Guangdong Province Engineering Research Center of High Efficiency and Low Pollution Energy Conversion, the specialty provide a advanced platform in teaching, research, practice and international communication, and the cultivating mode is integrated with the production, study, research and international communication. The teaching level of Energy and Power Engineering rank the leading level in southern China, especially in field of power plant thermal & power system and refrigeration & air conditioning technology.

授予学位：工学学士学位

Degree Conferred: Bachelor of Engineering

主干课程：

工程热力学、传热学、流体力学、锅炉原理、汽轮机原理、制冷技术、工程燃烧学、热工测量与仪表。

Core Courses:

Thermal Dynamic Engineering, Heat Transfer, Fluid Dynamic, Principles of Boiler, Principles of Steam Turbines, Refrigeration Technology, Combustion Engineering, Thermal Measurement and Instrumentation

特色课程：

双语教学课程：流体力学、热工过程自动调节，工程热力学

新生研讨课程：生物质能源化利用技术研讨

研究型课程：高等工程热力学、高等流体力学、高等传热学、热工过程计算机分析、热物理近代测试技术

创业教育课程：节能减排产业模式与创业

Featured Courses:

Bilingual Courses: Fluid Dynamic, Automatic Control for Thermal Processes, Thermal Dynamic Engineering

Freshmen Seminars: Biomass Energy Utilization Technology Seminar

Research Courses: Advanced Engineering Thermodynamic, Advanced Fluid Dynamic, Advanced Heat Transfer, Computer Analysis on Thermal Process, Measuring Techniques for Thermal Physics and Experiment Method

Entrepreneurship Courses: Industry Model and Entrepreneurship of Energy Conservation and Emission Reduction

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 合 作 项 目	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								
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	B	B	J	18	2							1										20									
二	3	G	G	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	16	2					2												20										
	4	H	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	K	K	15	1					2			2									20									
三	5	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	E	E	16	2			2															20									
	6	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	E	E	L	L	15	1			2					2										20								
四	7	A	A	A	A	A	A	A	A	A	A	A	A	A	I	B	B	E	E	15	2			2			1													20								
	8	O	O	O	O	O	O	O	O	O	O	O	O	O	O	Q	Q	Q	P	P																		15	2	3		20						
		合 计 (周)																		109	11	1	3	6		2	2	1	1	2	2													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	70.5	1100	
	通识 General Education	10.0	160	
学科基础课 Disciplinary Basic Courses	必修 Compulsory	40.5	658	
	选修 Elective	3.0	48	
专业领域课 Specialty-related Courses	必修 Compulsory	9.0	144	
	选修 Elective	11.0	176	
合计 Total		144.0	2286	
集中实践教学环节 (周) Practice Training (Weeks)	必修 Compulsory	36.0	36 周	
毕业学分要求 Credits Required for Graduation	144.0+36.0=180.0			

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	其中 Include	其中 Include	总学	其中 Include	其中 Include	其中 Include

时数 Total	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	分数 Total	必修 学分 Compulsory	选修 学分 Elective	集中实践 教学环节 学分 Practice-co ncentrated 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 Entrepreneurs hip Education
2286	1902	384	2000	286	180	156	24	36	135	9	20

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	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
	130137	画法几何及机械制图 (一) Descriptive Geometry & Machine Drawing (1)		48				3.0	1	№2,4
	130138	画法几何及机械制图 (二) Descriptive Geometry & Machine Drawing (2)		64				4.0	2	№2,4
	140191	微积分 II (一) Calculus(1)		80				5.0	1	№1,2
	140192	微积分 II (二) Calculus(2)		80				5.0	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
	140015	复变函数 Complex Variable		32				2	3	№1,2

140016	积分变换 Integral Transformation		16				1	3	№1,2
141005	大学物理III (一) General Physics (1)		64		32		4.0	2	№1,2
141006	大学物理III (二) General Physics (2)		64		32		4.0	3	№1,2
141007	大学物理实验 (一) Physics Experiment(1)		32				1.0	2	№2,4
141008	大学物理实验 (二) Physics Experiment(2)		32				1.0	3	№2,4
147045	大学化学 General Chemistry		32				2.0	1	№1,2
147036	大学化学实验 General Chemistry Experiment		16		16		0.5	2	№2,4
145269	C++程序设计基础 C++ Programming Foundations		48				3.0	2	№1,2
	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			1260		80	128	80.5		

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 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	133248	工程力学III Engineering Mechanics	必 C	80				5.0	3	№1,2
	134090	流体力学 Fluid Mechanics	必 C	64				4.0	3	№1,2
	140045	数学物理方程 Equation of Mathematical Physics	必 C	32				2	4	№1,2
	134022	工程热力学 Engineering Thermodynamic	必 C	64		4		4.0	4	№1-3
	135026	电工与电子技术 I Electrical Engineering & Electron technics	必 C	72		24		4.0	4	№1,4
	134023	传热学 Heat Transfer	必 C	64		4		4.0	5	№1-3
	134069	制冷技术 Refrigeration Technology	必 C	48				3.0	5	№1-7
	134128	学科发展前沿讲座 Development & Frontier Lectures of Energy and Power Engineering	必 C	32				2.0	5	№6,7
	134032	锅炉原理 Principles of Boiler	必 C	48				3.0	6	№1-4
	131058	机械设计基础 Basis of Mechanical Design	必 C	64				4.0	6	№1-4
	130310	机械基础综合实验 I Poly-experiment of Mechanical Fundamentals	必 C	10		10		0.5	6	№1-4

	134031	汽轮机原理 Principles of Steam Turbines	必 C	48				3.0	6	№1-3
	134029	工程燃烧学 Combustion Engineering	必 C	32		2		2.0	6	№1,2,4,6,7
	134191	生物质能源化利用技术研讨 Biomass Energy Utilization Technology Seminar	选 E	16				1.0	1	№1,2,7-10
	134129	电站燃气轮机原理 Principles of Heavy-duty Gas Turbines	选 E	32				2.0	7	№1-4
	134033	热力发电厂 Thermal Power Plant	选 E	48				3.0	7	№1-4,6,7
	合 计 Total			必 C	658		44		40.5	
			选 E	选修课修读最低要求 3.0 学分 minimum elective course credits required: 3.0						
专业领域课 Specialty - related Courses	134138	大气污染与工业通风 Air Pollution and Industrial Ventilation	必 C	32				2.0	5	№1~7
	134078	换热器原理与设计 Principle and Design of Heat Exchangers	必 C	32				2.0	5	№1~5
	134089	泵与风机 Pumps and Fans	必 C	32				2.0	6	№1-3,4,7
	134137	热工测量与仪表 Thermal Measurement and Instrumentation	必 C	48		2		3.0	7	№1-12
	134197	电厂化学 Power Plant Chemistry	选 E	48				3.0	3	№1-4,6,7,12
	134198	统计热力学 Thermodynamics Statistical Physics	选 E	32				2.0	2	№1,2,5
	134199	新能源与可再生能源概论 Introduction of New and Renewable Energy	选 E	32				2.0	4	№1,6,7
	134143	核工程与核技术概论 Introduction of Nuclear Engineering and Technology	选 E	32				2.0	4	№1~4,7,12
	134200	实验数据分析处理与科技绘图 Analysis and Process of Experimental Data, Technology Drawing	选 E	48	16			2.5	5	№1-5
	134201	科技英语阅读与写作 English Reading and Writing for Science and Technology	选 E	48			16	2.5	5	№2,4-6,10
	134202	热工过程计算机分析 Computer Analysis on Thermal Process	选 E	32				2.0	5	№1-5
	134026	计算机辅助设计 Computer Aided Design	选 E	32	16			1.5	5	№3-5
	134036	空气调节 Air Conditioning	选 E	40				2.5	6	№1-5
	134203	高等传热学 Advanced Heat Transfer	选 E	48				3.0	6	№1-12
	134204	热物理近代测试技术 Measuring Techniques for Thermal Physics and Experiment Method	选 E	32				2.0	6	№1-5
	134182	节能减排产业模式与创业 Industry Model and Entrepreneurship of Energy Conservation and Emission Reduction	选 E	32				2.0	6	№1,2,6,7,10-12
134205	高等工程热力学 Advanced Engineering Thermodynamic	选 E	48				3.0	7	№1-5	

134206	高等流体力学 Advanced Fluid Mechanics	选 E	48				3.0	7	№1-5
134155	制冷压缩机原理 Principle of refrigeration compressor	选 E	32				2.0	7	№1-3
134035	热工过程自动调节 Automatic Control for Thermal Processes	选 E	48		10		3.0	7	№1-3
	燃煤电厂烟气环保技术 Flue Gas Environment Protection in Coal-fired Power Plant	选 E	32				2.0	7	№1-5,7
134160	单元机组集控运行 Operation of Distributed Control System with a Unit	选 E	32				2.0	7	№1-4,7
134207	能源互联网与智慧能源概论 Introduction of Energy Internet and Intelligent Energy	选 E	32				2.0	7	№1-6
120003	创新研究训练 Innovation Research Training	选 E	32				2.0		№1-5
120004	创新研究实践 I Innovation Research Practice 1	选 E	32				2.0		№1-5
120005	创新研究实践 II Innovation Research Practice 2	选 E	32				2.0		№1-5
120006	创业实践 Entrepreneurial Practice	选 E	32				2.0		№1-5
合 计 Total		必 C	144		2		9.0		
		选 E	选修课修读最低要求 11.0 学分 minimum elective course credits required: 11						

备注：1.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。2.高等传热学、高等工程热力学、高等流体力学、热物理近代测试技术和热工过程计算机分析为本科生和硕士研究生共享课。

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	№9,10
143197	马克思主义理论与实践 Marxism Theory and Practice	必 C	2 周		2.0	假期	№8,12
130356	工程训练 I Engineering Training	必 C	2 周		2.0	3	№4,7
141073	电子工艺实习 II Practice of Electronic	必 C	2 周		2.0	4	№4,7
134083	社会实践 Social Internship	必 C	1 周		1.0	2	№2,10,12
134064	生产实习 Production Internship	必 C	2 周		2.0	4	№1,2, 6-12
134139	制冷技术与空调课程设计 Course Design of Refrigeration Technology and Air Conditioning	必 C	2 周		2.0	5	№1-7
130195	机械设计基础课程设计 Course Design of Basis of Mechanical Design	必 C	2 周		2.0	6	№1-4

134078	锅炉原理课程设计 Course Design of Principles of Boiler	必 C	2 周		2.0	7	№1-4
134208	综合实验课 Integrated Experimental Course for Energy and Power Engineering	必 C	1 周		1.0	7	№2-12
134080	毕业实习 Graduation Internship	必 C	2 周		2.0	6	№6-12
134091	毕业设计 Graduation Design	必 C	15 周		15.0	8	№2-12
合 计 Total		必 C	36 周		36.0		

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, namely, 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, each 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, each 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.