

机械工程

Mechanical Engineering

专业代码: 080201

学 制: 4 年

Program Code: 080201

Duration: 4 years

培养目标:

培养热爱祖国、坚持社会主义道路、适应国家发展需要、德智体美劳全面发展、具有扎实的机械学科理论基础和专业知识与基本技能, 能在国内知名的科研院所和企事业单位从事科学研究、工程设计、制造生产、技术开发、营销和管理等方面工作, 具有国际化视野的创新型复合人才。

Educational Objectives:

To cultivate students to become patriotic, to follow the socialist road, to adapt to national development requirements, to develop in an all-round way morally, intellectually, physically and aesthetically, and to possess solid theoretical basis, expertise knowledge, basic skills and innovative mind of mechanical engineering discipline, which enables them to be inter-disciplinary talents mastering advanced technology who can work on mechanical design, mechanical manufacturing & automation, mechanical equipment, operation management of mechanical production, marketing and service of mechanical produces, etc.

毕业要求:

№1.工程知识: 掌握从事机械工作所需的数学和相关的理化科学知识、机械工程基础理论知识、专业基本原理、方法和手段以及一定的经济管理知识, 为解决机械工程复杂问题打下知识基础。

№2.问题分析: 能够应用数学、自然科学和工程科学的基本原理, 识别、表达、并通过文献研究分析机械工程复杂问题, 以获得有效结论。

№3.设计/开发解决方案: 能够设计针对复杂机械工程问题的解决方案, 设计满足特定需求的机械系统、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机械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: 能够针对机械工程复杂问题, 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, 包括对机械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: 能够基于机械工程相关背景知识进行合理分析, 评价机械工程实践和机械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机械工程复杂问题的工程实践对环境、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：能够就机械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。并具有一定的国际视野，能够在跨文化背景下进行沟通和交流。

№11.项目管理：理解并掌握机械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:

Students of the major applying for graduation need to meet the following requirements:

№1. Engineering knowledge: Students must have mastered mechanical-related natural science knowledge such as mathematics, basic theoretical knowledge of mechanical engineering, professional basic discipline, methodology and some level of economic management, and the state-of-art and trend of mechanical engineering, which lays the knowledge ground to solve practical and intricate mechanical engineering problems of enterprises.

№2. Problem analysis: Students need to recognize, express and analyze intricate problems of mechanical engineering via mathematics, natural science, expertise fundamentals, methodology, economic management and relevant literature to obtain valid conclusions.

№3. Solution designing/developments:: Students need to design solutions aiming at intricate problems of mechanical engineering, mechanical system which can meet particular requirements, and procedures of units (components) or process. Furthermore, they need to embody innovation consciousness during the process of design and consider some factors including society, health, safety, law, culture and environment.

№4. Research: Students need to have the capabilities to study intricate problems of mechanical engineering based on scientific principles and the employment of scientific methodology which includes experiment design, data analysis and explanation, obtainment of reasonable and valid conclusions.

№5. Employment of modern appliances: Students need to be able to develop, select and utilize appropriate technology, resources, modern engineering tools and information technology tools, which includes prediction and simulation of intricate mechanical engineering problems, and they need to understand the limitation.

№6. Engineering and safety: Students need to reasonably analyze and assess the effects of mechanical engineering practice and solution to the intricate problems of mechanical engineering on society, health, safety, law and culture, and they need to know the responsibilities they need to take.

№7. Environment and sustainable development: Students need to understand and assess the effects of engineering practice aiming at intricate problems of mechanical engineering on environment and social

sustainable development.

№8. Vocational norms: Students need to possess scientific qualities of humanistic society and social responsibilities, and they need to understand and observe engineering professional morals and norms and take corresponding responsibilities.

№9. Individuals and teams: Students need to play a role in individual, team member and conductor under multidisciplinary background.

№10. Communication: Students need to communicate effectively with peers and public mass aiming at intricate problems of mechanical engineering which includes report writing and manuscript designing, speech statement, clear and articulate response or expression of instructions. Furthermore, they need to have some international perspectives and to be able to communicate under multicultural background.

№11. Project management: Students need to understand and master the methods of managerial principals of mechanical engineering and economy decision and to be able to apply them under multidisciplinary environment.

№12. Lifelong study: Students need to have the consciousness of independent study and lifelong study and have the capabilities of continuous study and adaptation of development.

专业简介：（限 500 字以内）

华南理工大学机械工程专业历史悠久，学科 1934 年始创于原国立中山大学，1952 年经院系调整形成华南工学院机械工程专业。1981 年成为国家首批博士学位授权点。2003 年获批机械工程一级学科博士学位授予权学科和一级学科博士后科研流动站。2006 年成为广东省重点学科，2007 年被教育部列为国家重点学科培育学科。经过数十年的发展，华南理工大学机械工程专业已成为立足华南、面向全国的研发和创新人才的培养基地。本专业围绕精密制造装备、精密和超精密加工技术、精密成形及模具技术、面向装备的控制技术等开展教学与研究工作，部分领域在国内处于优势地位，为国家培养了一大批先进制造创新人才。多年来，我校机械工程专业本科生就业率一直保持在 100%，人才培养质量受到用人单位的高度认可，在国内外，尤其在华南地区形成了重要的影响。

本专业师资力量雄厚。本专业建立了 4 个稳定的校内实习基地及 20 多个校外实习基地，其中具有稳定合作关系的实习基地有湖北十堰东风汽车发动机厂及二汽公司若干子工厂、广州本田发动机厂、广州明珞汽车装备有限公司等，为本专业学生提供了良好的校外实践场所和条件。拥有丰富的专业相关中、外文纸质和电子图书以及网络学术资源数据，为专业教学和科研工作提供了良好条件。

Program Profile:

Mechanical Engineering of SCUT (South China University of Technology) is a time-honored major which was established in former Stated-owned Sun Yat-Sen University in 1934, and it became Mechanical Engineering expertise of South China Polytechnic College by the adjustment of national colleges in 1952.

This major became one of the first national doctorate authorization centers. In 2003, mechanical engineering was approved to be the Level 1 discipline of mechanical engineering doctorate granting discipline and Level 1 discipline post-doctoral mobile research station. It became the key discipline of Guangdong Province in 2006 and was enrolled as state key development discipline by National Education Minister in 2007. After decades of development, mechanical engineering of SCUT has become the innovation foundation of scientific and innovative talents based on Southern China and nationwide. This major closely performs teaching and research centering on precise manufacturing equipment, precise and super-precise manufacturing technology, precise forming and mold technology, and some of the areas take the lead in China which cultivated a horde of innovative talents in advanced manufacturing field. Over the years, the employment rate of students majoring in mechanical engineering in our campus is always 100% which is highly recognized by enterprises, and it poses a great impact at home and abroad especially in southern China.

The teaching force of this major is strong and solid, there are 26 professional teachers in Mechanical Manufacturing Department which includes 15 professors, 7 deputy professors and 4 lecturers. The teachers mentioned above undertake main course construction tasks of mechanical manufacturing specialty and other faculties taking part in talent cultivation of mechanical manufacturing are as follows: 17 teachers in Mechanics Department, 8 teachers in Industrial Training Center; 8 experiment personnel of mechanical engineering. Workforce in other experimental sub-centers participating in the experimental courses are as follows: 6 teachers in Machinery Foundation Experiment Sub-center, 33 teachers in Industrial Training Center. Our faculty has founded 4 stable in-campus practice bases and established more than 20 out-campus practice bases for students majoring in mechanical engineering, among these practice bases, enterprises such as Shiyangdongfeng Automobile Engine Factory of Hubei Province, some subsidiary factories affiliated to Secondary Automotive Corporation, Guangzhou Honda Engine Plant, Guangzhou Mingluo Automotive Equipment Limited Company have formed solid and stable cooperation relationships with us, therefore, these stable out-campus practice bases provide excellent and suitable extracurricular practice sites and conditions. Furthermore, there are bountiful resource data of papers, electronic books and network academia at home and abroad which paves an advantageous path for expertise teaching and research.

专业特色：（限 100 字以内）

厚基础、宽适应，培养学生掌握扎实的机械工程领域理论基础知识和专业知识，通过丰富的实验和设计训练、实习以及科技活动，使学生受到现代工程师的基本训练，掌握基本技能并锻炼创新思维，围绕精密制造装备、精密成形及模具技术、数字化设计与制造等方向开展教学，对于在机械工程领域从事工程设计、制造生产、技术开发、科学研究、营销和管理工作具有宽广适应性。

Program Features:

Through solidifying the basis and broadening adaptation, students are cultivated to grasp solid and basic knowledge of mechanical engineering and expertise knowledge. Students can be trained by modern engineers via plenty of experiments and designing training, practice and technological activities which makes them master basic skills and cultivate innovation mind. Through teaching centering on precision manufacturing equipment, precision forming& die technology, and digital design & manufacturing, it will have wide adaptability for students servicing in mechanical engineering field to work at engineering design, manufacturing production, technology development, scientific research, marketing and management.

授予学位：工学学士学位

Degree Conferred: Bachelor of Engineering

核心课程：

画法几何及机械制图、材料力学、机械工程材料、机械原理、机械设计、成型技术基础、机械制造技术基础、电工与电子技术、单片机原理及应用、控制工程基础。

Core Courses:

Descriptive Geometry & Machine Drafting, Mechanics of Materials, Materials of Mechanical Engineering, Theory of Machines and Mechanism, Mechanical Design, Basis of Material Shaping Technology, Fundamentals of Machine Manufacture Engineering Science, Electrical Engineering and Electrontechnics, Principle and Application of Microcontroller, Basis of Cybernetics.

特色课程：

新生研讨课：增材制造（3D 打印）及精密连接技术、太阳能电池制造技术与应用实践、城市公共安全与人文精神、内燃机结构创新设计、高端产品及其先进制造、自动驾驶与智能网联汽车技术、轻工自动装备的未来与挑战

专题研讨课：机械工程概论、特种加工及现代制造技术

双语/全英课程：成型技术基础、机械原理、机械设计、机械制造技术基础

学科前沿课：精密及超精密加工技术、3D 打印技术与应用、人工智能与智能制造概况、数控技术与智能制造

创新实践课：创新方法与实践（提交一份创新创业调研报告）、数字化设计与制造、机械制造工艺与设备、冲压模具设计与制造、成型装备智能控制

创业教育课：企业信息化及生产管理、机电产品市场营销学（一门创业教育课）、创业实践（提交

一份创业计划书)

Featured Courses:

Freshmen Seminars: Additive Manufacturing (3D Printing) and Precision Joining Technology, Manufacturing Technology and Applied Practice of Solar Cell, City Public Security and Humanistic Spirit, Innovating Design on Structure of Internal-Combustion Engine, High-end Products and Advanced Manufacturing, Technologies for Unmanned and Intelligent Connected Vehicles, Future and Challenge for Automatic Equipment in Light Industry

Special Topics: Introduction to Mechanical Engineering, Special Processing & Modern Manufacturing Technology.

Bilingual Courses: Basis of Material Shaping Technology, Theory of Machines and Mechanism, Mechanical Design, Fundamentals of Machine Manufacture Technology

Subject Frontiers Courses: Precision and Ultra-Precision Machining Technology, 3D Printing Technology and Applications, Introduction to Artificial Intelligence and Intelligent Manufacturing, Computer Numerical Control and Intelligent Manufacturing

Innovation Practice: Innovation Method and Practice, Digital Design and Manufacturing, Machinery Manufacturing Process and Equipment, Design and Manufacturing of Stamping Die, Intelligent Control of Molding Equipment

Entrepreneurship Courses: Enterprise Informatization & Production Management, Mechanical and Electrical Products Marketing, Entrepreneurial Practice

一、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	69.5	1340	
	通识 General Education	10	160	
专业基础课 Specialty Basic Courses	必修 Compulsory	43	704	
选修课 Elective Courses	选修 Elective	12	192	
合 计 Total		134.5	2396	
集中实践教学环节（周） Practice Training (Weeks)	必修 Compulsory	35.5	40.5 周	
毕业学分要求 Credits Required for Graduation	134.5+35.5=170.0			

备注：毕业学分要求格式：合计学分+集中实践教学环节学分=毕业学分要求

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
2396	2044	352	2044	352	170	148	22	35.5	123.5	11	10

注：1. 通识课计入选修一项中；

2. 实验教学包括“专业教学计划表”中的实验、实习和其他；

3. 创新创业教育学分：培养计划中的课程，由各学院教学指导委员会认定，包括竞教结合课程、创新实践课程、创业教育课程等学分；

4. 必修学时+选修学时=总学时数；理论教学学时+实验教学学时=总学时数；必修学分+选修学分=总学分数；集中实践教学环节学分+理论教学学分+实验教学学分=总学分数；

二、课程设置表 (Courses 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	实验 Lab Hours	实习 Practice Hours	其他 Other Hours			
公共基础课 General Basic Courses	031101492	思想道德修养与法律基础 Cultivation of Thought and Morals & Fundamental of Law	必 C	40			4	2.5	1	№8
	031101371	中国近现代史纲要 Skeleton of Chinese Modern History	必 C	40			4	2.5	2	№8
	031101423	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	必 C	72			24	4.5	3	№8
	031101621	马克思主义基本原理概论 Fundamentals of Marxism Principle	必 C	40			4	2.5	4	№8
	031101331	形势与政策 Analysis of the Situation & Policy	必 C	128				2.0	1-8	№8
	044103681	大学英语 (一) College English(1)	必 C	48				3.0	1	№10
	044103691	大学英语 (二) College English(2)	必 C	48				3.0	2	№10
	052100332	体育 (一) Physical Education (1)	必 C	32			32	1.0	1	№12
	052100012	体育 (二) Physical Education (2)	必 C	32			32	1.0	2	№12
	052100842	体育 (三) Physical Education (3)	必 C	32			32	1.0	3	№12
	052100062	体育 (四) Physical Education (4)	必 C	32			32	1.0	4	№12
	006100112	军事理论 Military Principle	必 C	36			18	2.0	2	№9
	040100051	微积分 II (一) Calculus(1)	必 C	80				5.0	1	№1,2
	040100411	微积分 II (二) Calculus(2)	必 C	80				5.0	2	№1,2
	040100401	线性代数与解析几何 Linear Algebra & Analytic Geometry	必 C	48				3.0	1	№1,2
	040100023	概率论与数理统计 Probability & Mathematical Statistics	必 C	48				3.0	2	№1,2
	045101693	计算方法 Computing method	必 C	32				2.0	3	№1,2,5
	040101731	复变函数 Complex Variable	必 C	32				2.0	3	№1,2
	040100471	积分变换 Integral Transformation	必 C	16				1.0	3	№1,2
	041101151	大学物理 III (一) General Physics (1)	必 C	64				4.0	2	№1,2
	041100341	大学物理 III (二) General Physics (2)	必 C	64				4.0	3	№1,2
	041100671	大学物理实验 (一) Physics Experiment(1)	必 C	32	32			1.0	3	№1,2

041101051	大学物理实验（二） Physics Experiment(2)	必 C	32	32			1.0	4	№1,2
037102783	大学化学 General Chemistry	必 C	32				2.0	1	№1,2
037101943	大学化学实验 General Chemistry Experiment	必 C	16	16			0.5	2	№1,2
074102352	画法几何及机械制图（一） Descriptive Geometry & Machine Drawing (1)	必 C	48				3.0	1	№1,2,5
074102781	画法几何及机械制图（二） Descriptive Geometry & Machine Drawing (2)	必 C	64				4.0	2	№1,2,5
045101644	大学计算机基础 Foundations of Computer	必 C	32			32	1.0	1	№5
045100772	C++程序设计基础 C++ Programming Foundations	必 C	40			8	2.0	2	№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			1500	80		214	79.5		

备注：学时中其他可以为上机和实践学时。

二、课程设置表（续）（Courses 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	实 验 Lab Hours	实 习 Practice Hours	其他 Other Hours			
专业基础课 Specialty Basic Courses	033100983	理论力学I Theoretical Mechanics I	必 C	64			4	4.0	3	№1,2
	033101063	材料力学 IV Mechanics of Materials IV	必 C	64	6		4	4.0	4	№1,2
	024100213	电工与电子技术II Electrical Engineering and Electronic technique II	必 C	64				4.0	4	№1,2,3
	024100141	电工与电子技术实验 Experiment of Electrical Engineering and Electronic technique	必 C	32	32			1.0	5	№1,2,3
	030102472	机械工程材料 Materials of Mechanical Engineering	必 C	40				2.5	5	№1,2,6
	031100362	工程热力学 Engineering Thermodynamics	必 C	32				2.0	5	№1,2
	067100532	流体力学 Fluid Mechanics	必 C	24				1.5	4	№1,2
	030106012	传热学 Heat Transmission	必 C	24				1.5	5	№1,2
	030102522	机械工程概论 Introduction to Mechanical Engineering	必 C	16				1.0	2	№6,7
	030101611	机械原理III Theory of Machines and Mechanism III	必 C	56				3.5	5	№1,2,3,4
	030100651	机械设计III Mechanical Design III	必 C	56				3.5	6	№1,2,3,5
	030101782	互换性与技术测量 Interchange Ability and Technical Measurement	必 C	24				1.5	5	№1,2
	067101401	测试技术与信号处理 Measurement Technology& Signal Processing	必 C	32				2.0	6	№1,2,4,5
	067101081	控制工程基础 Fundamentals of Control Engineering	必 C	32	4			2.0	5	№1,2,3
	030100833	成型技术基础 Basis of Material Shaping Technology	必 C	48				3.0	6	№1,2,3
	030102153	机械制造技术基础 Fundamentals of Machine Manufacture Technology	必 C	48				3.0	6	№1,2,3
	067101471	单片机原理及应用 Principle and Application of Microcontroller	必 C	32			8	2.0	5	№1,5

	030106122	企业信息化及生产管理 Enterprise Informatization & Production Management	必 C	16				1.0	5	№1,2,11
	合 计 Total			704	42		16	43.0		
选修课 Elective Courses	专业模块课程 Module Courses									
	067101651	数字化设计与制造 Digital Design and Manufacturing	选 E	48				3.0	6	№2,3,5
	067101691	数控技术与智能制造 Computer Numerical Control and Intelligent Manufacturing	选 E	32				2.0	6	№2,3,5
	067101091	机械制造工艺与设备 Machinery Manufacturing Process and Equipment	选 E	48				3.0	6	№2,3,4
	067101561	冲压模具设计与制造 Design and Manufacturing of Stamping Die	选 E	48				3.0	6	№2,3,5
	067101721	成型装备智能控制 Intelligent Control of Molding Equipment	选 E	32				2.0	6	№2,3,5
	067101711	高分子产品先进制造装备 Advanced Manufacturing Equipment for Polymer Products	选 E	48				3.0	6	№2,3,4
	其他选修课 Other Elective Courses									
	030102361	太阳能电池制造技术与应用实践 Manufacturing Technology and Applied Practice of Solar Cell	选 E	16				1.0	2	№2,6,7
	030103262	城市公共安全与人文精神 City Public Security and Humanistic Spirit	选 E	16				1.0	2	№2,6,7
	067101021	内燃机结构创新设计 Innovating Design on Structure of Internal-Combustion Engine	选 E	16				1.0	1	№2,6,7
	067101031	高端产品及其先进制造 High-end Products and Advanced Manufacturing	选 E	16				1.0	2	№2,6,7
	067101041	增材制造（3D 打印）及精密连接技术 Additive Manufacturing (3D Printing) and Precision Joining Technology	选 E	16				1.0	1	№2,6,7

067101051	自动驾驶与智能网联汽车技术 Technologies for Unmanned and Intelligent Connected Vehicles	选 E	16				1.0	2	№2,6,7
067101011	轻工自动装备的未来与挑战 Future and Challenge for Automatic Equipment in Light Industry	选 E	16				1.0	1	№2,6,7
067101111	人工智能与智能制造概况 Introduction to Artificial Intelligence and Intelligent Manufacturing	选 E	16				1.0	5	№4,5,6
030103001	机械制造工艺过程自动化 Machinery Manufacturing Process Automation	选 E	32				2.0	7	№2,3,6
067101621	塑料模具设计与优化 Design and Optimization of Plastic Mold	选 E	32				2.0	7	№2,3,5
067101071	金属材料精密塑性成形技术 Precision Plastic Forming Technology of Metallic Material	选 E	32				2.0	7	№2,3,5
030101663	数字图像处理及应用 Digital Image Processing &Application	选 E	32				2.0	7	№2,3,5
030102881	工程优化技术及 Matlab 实现 Engineering Optimization & Matlab Realization	选 E	32				2.0	7	№2,3,5
030101503	机电传动控制 Mechanical & Electrical Transmission Control	选 E	32				2.0	7	№2,3,5
030102251	可编程逻辑控制器-原理及应 用 Principle and Applications on Programmable Logic Controller	选 E	32				2.0	7	№2,3,5
030102332	加工过程的计算机控制 Computer control of machining process	选 E	24				1.5	7	№2,3,5
030101211	虚拟仪器 (LabVIEW 程序设 计) Virtual Instrument (LabVIEW programming design)	选 E	32				2.0	7	№2,3,5
030102211	机器人学导论 Introduction to Robotics	选 E	24				1.5	7	№2,3,6

030102553	液压及气压传动技术 Hydraulic and Pneumatic Transmission Technology	选 E	32	4			2.0	7	№2,3,7
030100611	振动冲击与噪声 Impact Vibration & Noise	选 E	32				2.0	7	№2,3,7
067101061	机电产品市场营销学 Mechanical and Electrical Products Marketing	选 E	32				2.0	7	№6,7,8
030104942	专业英语 Specialized English	选 E	24				1.5	7	№10
030102901	特种加工及现代制造技术 Special Processing & Modern Manufacturing Technology	选 E	32	2			2.0	7	№2,3,4
030101201	精密及超精密加工技术 Precision and Ultra-Precision Machining Technology	选 E	32				2.0	7	№2,3,4
030101171	汽车制造技术基础 The Foundation of Automotive Manufacturing Technology	选 E	32				2.0	7	№2,3,5
067101551	3D 打印技术与应用 3D Printing Technology and Applications	选 E	32	2			2.0	7	№3,4,5
067101611	材料结构与性能 Structure and Performance of Materials	选 E	32				2.0	7	№2,3,4
<u>067101741</u>	软物质加工原理与技术 Processing Principle and Technology of Soft Materials	选 E	32				2.0	7	№2,3,5
067101601	材料性能表征 Materials Properties and Characterization	选 E	32				2.0	7	№2,4,5
067101361	创新方法与实践 Innovation Method and Practice	选 E	24				1.5	7	№3,4,12
020100051	创新研究训练 Innovation Research Training	选 E	32				2.0	7	№2,9,12
020100041	创新研究实践 I Innovation Research Practice I	选 E	32				2.0	7	№2,9,12
020100031	创新研究实践 II Innovation Research Practice II	选 E	32				2.0	7	№2,9,12
020100061	创业实践 Entrepreneurial Practice	选 E	32				2.0	7	№8,9,10,11
合 计 Total		选 E	选修课修读最低要求 12 学分,其中专业课程模块要求 6 选 2, 学分要求≥5.0 minimum elective course credits required: 12, two of the six module courses with more than 5 credits are required.						

备注：学时中其他可以为上机和实践学时。

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。

三、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			
006100151	军事技能 Military Training	必 C	2 周		2.0	1	№9
031101551	马克思主义理论与实践 Marxism Theory and Practice	必 C	2 周		2.0	3	№8
030103311	工程训练III Engineering Training III	必 C	6 周		6.0	3-4	№1,9
041100131	电子工艺实习II Practice of Electronic II	必 C	2 周		2.0	5	№1,9
030101381	机械工程材料综合实验 Comprehensive Experiment of Mechanical Engineering Materials	必 C	1 周		1.0	5	№1,9
030100222	机械原理课程设计 Course Project of the Mechanisms and Machine Theory	必 C	2 周		2.0	5	№1,3
030101882	机械设计课程设计 Course Project of Mechanical Design	必 C	2 周		2.0	6	№1,3
030102651	机械基础综合实验III Comprehensive Experiment of Mechanical Foundation III	必 C	1.5 周		1.5	4-6	№1,2
030102171	学科基础实验课(制造) Basic Experiments for the Subject of Mechanical manufacture	必 C	1 周		1.0	6-7	№1,2
030101351	学科基础实验课(电控) Basic Experiments For The Subject of Electric Control	必 C	1 周		1.0	5-6	№1,2
030100352	专业模块课程设计 Course Project of Module Courses	必 C	2 周		2.0	7	№2,3,5
030100292	生产实习 Production Practice	必 C	3 周		3.0	7	№6,7,8
067100644	毕业设计（论文） Diploma Project (Thesis)	必 C	15 周		10.0	8	№3,4,5,7
合 计 Total		必 C	40.5 周		35.5		
		选 E	选修课修读最低要求 0 学分(专业模块课程设计必须 完成选修课中专业模块相关课程才能进行相应的课 程设计) minimum elective course credits required: 0 (for the course project of module courses, the corresponding courses and credits for the module courses are required)				

四、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、广东省创新创业训练计划、SRP（学生研究计划）、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。

4.“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.