机械与电子信息学院

- 电子信息工程专业培养方案
- 机械设计制造及其自动化专业培养方案
- 机械设计制造及其自动化(卓越工程师教育培养计划)专业培养方案
- 工业设计专业培养方案
- 通信工程专业培养方案

电子信息工程专业培养方案

专业名称与代码：电子信息工程　080701

专业培养目标：本专业将培养德、智、体全面发展，具有电子信息领域系统、扎实的理论基础，具有工程实践和创新能力的高素质科技人才。本专业的毕业生将掌握信息科学领域内基础理论知识，获得从信息获取、传递、处理到应用等各方面的基本专业知识，掌握电子电路、信号处理以及多媒体信息处理等方向的基本原理和技术，具有参与设计和开发信息应用系统的工程实践能力。毕业生将具有较强的专业英语能力、良好的人文素质和创新精神，成为能在信息和通信技术产业的科研部门、高等院校从事通信系统与工程的设计、集成及开发等工作的研究型或应用型人才。

专业毕业要求

1. 系统地掌握本专业领域的基础理论知识，主要包括电路理论、电子技术、通信技术、检测技术、信息处理、计算机软、硬件基础及应用。

2. 掌握电子电路的基本理论和实验技术，具有分析和设计电子电路的基本能力。

3. 掌握信息获取、处理的基本理论和应用的一般方法，具有应用计算机模拟信息系统的基本能力。

4. 了解信息产业的基本方针、政策和法规，了解企业管理的基本知识。

5. 了解电子设备和信息系统的理论基础及发展前沿，具有研究、开发相关电子产品的创新能力。

6. 掌握文件检索、资料查询的基本方法，具有主动获取专业信息的能力，较强的外语能力，计算机应用的能力，并具有一定的科学研究和实际工作的能力。

毕业要求及实现途径

序号	毕业要求	实现途径(教学过程)
1	系统地掌握本专业领域的基础理论知识，主要包括电路理论、电子技术、通信技术、检测技术、信息处理、计算机软、硬件基础及应用	①课堂教学：电路分析、模拟电路技术基础、数字电路技术基础、信号与系统、数字信号处理、单片机原理与应用、C 语言程序设计、数据结构、光电检测技术、信息论与编码、电磁场与电磁波、通信原理 ②课外学习：信息简史
2	掌握电子电路的基本理论和实验技术，具有分析和设计电子电路的基本能力	①课堂教学：现代可编程逻辑器件、片上系统设计、通信电子线路、电子线路教学实习、电子工程教学实习 ②课外学习：电子设计竞赛
3	掌握信息获取、处理的基本理论和应用的一般方法，具有应用计算机模拟信息系统的基本能力	①课堂教学：嵌入式系统与应用、DSP 技术与应用、数字图像处理、计算机网络、无线传感器网络原理与应用、信息工程教学实习、应用系统设计教学实习 ②课外学习：Matlab
4	了解信息产业的基本方针、政策和法规，了解企业管理的基本知识	①课堂教学：生产实习 ②课外学习：生产与作业管理
5	了解电子设备和信息系统的理论基础及发展前沿，具有研究、开发相关电子产品的创新能力	①课堂教学：C＋＋程序设计、嵌入式 Linux 软件设计、虚拟仪器技术、物联网技术概论、误差理论与数据处理、图像分析初步、机器视觉、CDMA 通信原理、宽带无线通信 ②课外学习：研究开发

序号	毕业要求	实现途径(教学过程)
6	掌握文件检索、资料查询的基本方法,具有主动获取专业信息的能力,较强的外语能力,计算机应用的能力,并具有一定的科学研究和实际工作的能力	①课堂教学:毕业实习与毕业设计 ②课外学习:文献情报检索

主干学科:电子科学与技术、信息与通信工程、计算机科学与技术。

核心课程:电路分析、单片机原理及应用、通信电子线路、电磁场与电磁波、数字信号处理、现代可编程逻辑器件、信息论与编码、嵌入式系统及应用、计算机网络等。

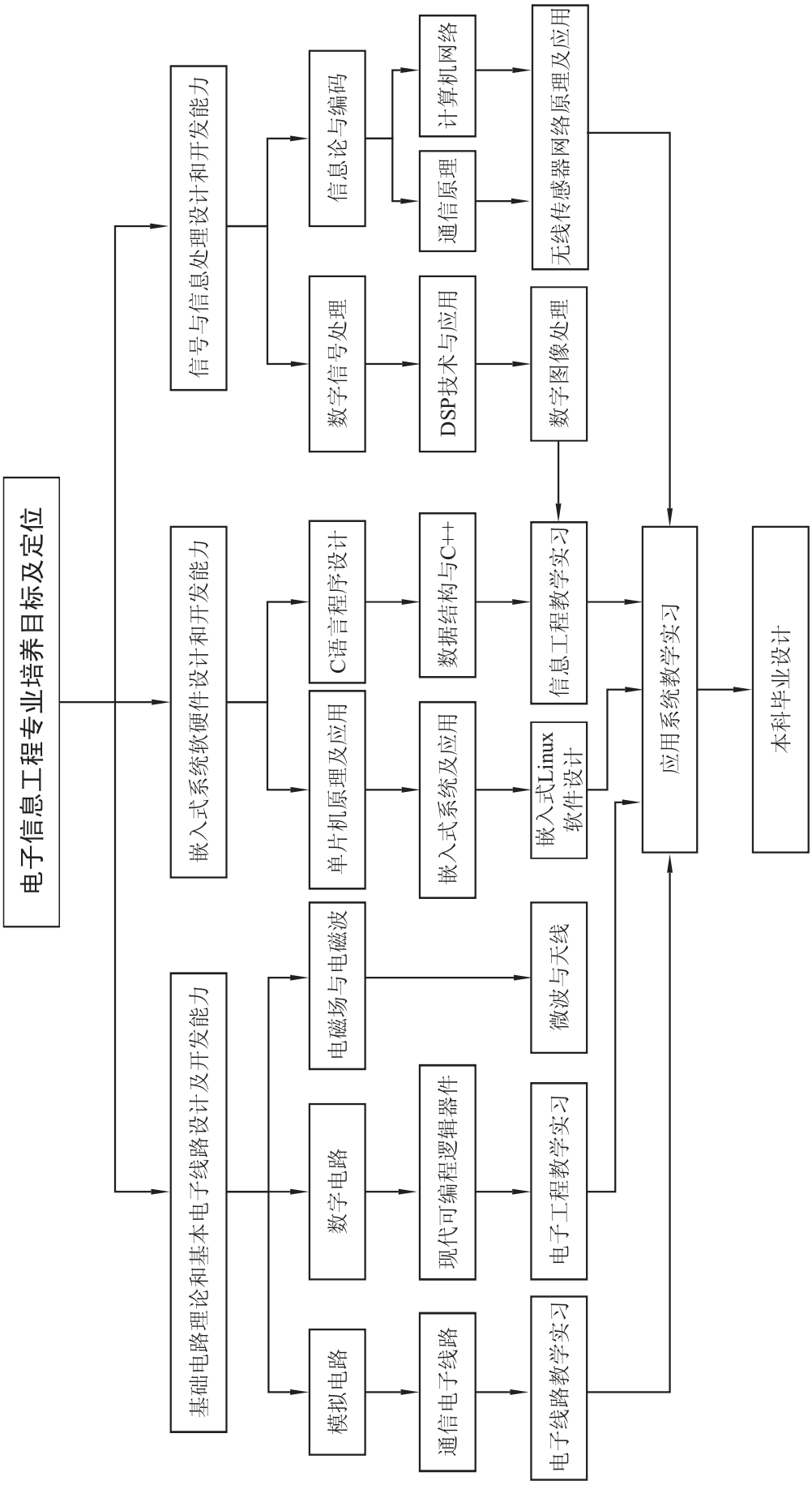
主要专业实验:电路分析实验、电子电路与数字电路系列实验、信号与信息处理实验、嵌入式系统实验等。

主要实践性教学环节:C 语言程序设计、电子线路教学实习、电子工程教学实习、信息工程教学实习、应用系统设计教学实习、生产实习、毕业设计等。

修业年限:四年。

授予学位:工学学士。

相近专业:通信工程、电子科学与技术。


电子信息工程专业培养目标及定位
基础电路理论和基本电子线路设计及开发能力
模拟电路
通信电子线路
电子线路教学实习
数字电路
现代可编程逻辑器件
电子工程教学实习
电磁场与电磁波
微波与天线
嵌入式系统软硬件设计和开发能力
单片机原理及应用
C语言程序设计
嵌入式系统及应用
数据结构与C++
嵌入式Linux软件设计
信号与信息处理设计和开发能力
数字信号处理
数字图像处理
信息工程教学实习
信息论与编码
通信原理
DSP技术与应用
计算机网络
无线传感器网络原理及应用
应用系统教学实习
本科毕业设计

Program for Electronic and Information Engineering

Specialty and Code: Electronic and Information Engineering 080701

Education Objective: This program is designed to cultivate fully-developed engineers in morality, intelligence and heath that are trained to develop the fundamental theories and skills, a consolidated knowledge structure, and to be enhanced with hands-on engineering experiences and innovative initiatives in electronics and information engineering. The graduates in this program are required to develop the systems and technologies which drive the information age, from acquiring information, transmission, processing to application. They are required to master the basic theories and skills in electronic circuits, signal processing and multimedia processing, and they are able to participate in the design and development of various communication and information systems. The graduates will be enhanced with strong professional English skills in electronics and information engineering, good personality and innovative initiatives. They will be qualified to design, integrate and develop systems and technologies in communications engineering in information and communications industries, research institutes, universities and other related communities.

Graduation Requirements

1. To grasp systematically the wide elementary theoretical knowledge of this specialty, mainly including the electronic circuit theory, electronic technology, communication technology, detecting technology, signal processing, the base and application of computer software and hardware.

2. To grasp the basic theory and practical techniques of electronic circuit and possessing the basic ability for analyzing and designing electronic equipments.

3. To grasp the basic theory and the generic methods of signal acquisition and processing and the basic ability to simulate information system in computer.

4. To understand the basic policy and laws of information industry and the knowledge of enterprise management.

5. To understand the advanced theory of electronic equipment and information system, possessing the innovation ability for researching and developing new system and technique.

6. To understand the basic method of document index and information inquisition, possessing the ability for obtaining specialty information actively, a good capacity of English and computer and the ability for scientific and practice.

Graduation Requirements and Ways to Achieve

No.	Graduation Requirements	Ways to Achieve(Teaching Process)
1	Grasping systematically the wide elementary theoretical knowledge of this specialty, mainly including the electronic circuit theory, electronic technology, communication technology, detecting technology, signal processing, the base and application of computer software and hardware	①Classroom Teaching: Circuit Analysis Introductory Analog Electronics, Digital Electronics, Signal and System, Digital Signal Processing, Single Chip Computer and Application, C Language Programming, Data Structure, Photoelectron Detecting Technology, Information Theory and Coding, Electromagnetic Field and Waves, Communication Principle ②Out-of-class Learning: the History of Information

No.	Graduation Requirements	Ways to Achieve(Teaching Process)
2	Grasping the basic theory and practical techniques of electronic circuit and possessing the basic ability for analyzing and designing electronic equipments	①Classroom Teaching: Modern Programming Logic Device, Design of System on a Chip, Communication Electronic Circuits, Electronic Circuit Practice, Electronic Engineering Practice ②Out-of-class Learning: Electronic Design Contest
3	Grasping the basic theory and the generic methods of signal acquisition and processing and the basic ability to simulate information system in computer	①Classroom Teaching: Principle and Application of Embedded Systems, DSP Technologies and Application, Digital Image Processing, Computer Networks, Principle and Application of Wireless Sensor Networks, Information Engineer Practice, Application Systems Design Practice ②Out-of-class Learning: Matlab
4	Understanding the basic policy and laws of information industry and the knowledge of enterprise management	①Classroom Teaching: Production Practice ②Out-of-class Learning: Production and Operation Management
5	Understanding the advanced theory of electronic equipment and information system, possessing the innovation ability for researching and developing new system and technique	①Classroom Teaching: C++ Programming, Embedded Linux Software Design, Virtual Instrument Technology, Introduction of Internet of Things, Error Theory and Data Processing, Basic Concept of Image Analysis, Machine Vision, the Principle of CDMA Communication System, Broadband Wireless Communications ②Out-of-class Learning: Research and Design
6	Grasping the basic method of document index and information inquisition, possessing the ability for obtaining specialty information actively, a good capacity of English and computer and the ability for scientific and practice	①Classroom Teaching: Graduate Practice and Bachelor Thesis ②Out-of-class Learning: Information Retrieval in Literature

Major Disciplines: Electronic Science and Technology, Information and Communication Engineering, Computer Science and Technology.

Main Courses: Circuit Analysis, Principle and Application of Single Chip Microcomputer, Communication Electronic Circuits, Electromagnetic Field and Wave, Digital Signal Processing, Modern Programming Logic Device, Information Theory and Coding, Principle and Application of Embedded System, Computer Networks, etc.

Lab Experiments: Circuit Analysis Experiment, Electronic Circuit Experiment, Digital Electronic Circuit Experiment, Signal and Information Processing Experiment, Embedded System Design Experiment, etc.

Practical Work: C Language Programming, Electronic Circuit Practice, Electronic Engineering Practice, Information Engineer Practice, Application Systems Design Practice, Productive Practice, Graduate Design.

Duration: four years.

Degree Granted: Bachelor of Engineering.

Related Specialties: Communication Engineering, Electronic Science and Technology.

电子信息工程专业课程教学计划表

Course Descriptions of Electronic and Information Engineering

课程类别 Course Classification		课程编号 Course Code	课程名称 Course Name	学分 Crs	学时 Hrs	学时分类 Class Hours		先修课程 Prerequisite Courses	学期学分分配 Semester Credits							
						讲课 Lec.	实验 Lab.		一 1st	二 2nd	三 3rd	四 4th	五 5th	六 6th	七 7th	八 8th
通识教育课 Liberal Education Courses	必修 ComPulsory	11706200	马克思主义基本原理 Principles of Marxism	3	48	48				3						
		11706500	毛泽东思想与中国特色社会主义理论体系概论 Introduction to Mao Tse-tung Thought and the Theoretical System of Socialism with Chinese Characteristics	4	64	64						4				
		11711800	中国近现代史纲要 The Essentials of Modern Chinese History	2	32	32				2						
		120002 * 0	思想道德修养与法律基础 Morality Education and Fundamentals of Law	3	48	48			1.5	1.5						
		113076 * 0	体育 Physical Education	4	144	144			1	1	1	1				
		109116 * 0	大学英语 College English	12	192	192			3	3	3	3				
		11918901	C 语言程序设计 A C Language Programming A	3.5	56	40	16		3.5							
		20724100	电子信息学科导论 Introduction to Electrical Information Science	1	16	16			1							
		14300100	军事理论 Military Theory	2	32	32			2							
	选修 Elective	总计 12 学分，含创新创业选修课学分，跨学科选修课不低于 6 学分。“形势与政策”课程作为限选课，由马克思主义学院实施		12	192	192										
		小计 **Sum**		**46.5**	**824**	**808**	**16**		**12**	**10.5**	**4**	**8**	**0**	**0**	**0**	**0**
学科基础课 Disciplinary Fundamental Courses		20714200	工程制图 Engineer Drawing	2.5	40	36	4		2.5							
		212127 * 1	高等数学 A Advanced Mathematics A	11.5	184	184			5	6.5						
		21212802	线性代数 B Linear Algebra B	2.5	40	40			2.5							
		21201902	复变函数与积分变换 B Function of Complex Variables & Integral Transformation B	2.5	40	40					2.5					

课程类别 Course Classification	课程编号 Course Code	课程名称 Course Name	学分 Crs	学时 Hrs	学时分类 Class Hours		先修课程 Prerequisite Courses	学期学分分配 Semester Credits							
					讲课 Lec.	实验 Lab.		一 1st	二 2nd	三 3rd	四 4th	五 5th	六 6th	七 7th	八 8th
学科基础课 Disciplinary Fundamental Courses	21213501	概率论与数理统计 A Probability and Statistics A	3.5	56	56					3.5					
	212130＊3	大学物理 C College Physics C	6	96	96				3.5	2.5					
	212132＊1	物理实验 A Physics Experiments A	3.5	56		56			2	1.5					
	20702700	电路分析 Circuit Analysis	4.5	72	64	8	高等数学 大学物理		4.5						
	20708801	模拟电路技术基础 A Introductory Analog Electronics A	4	64	54	10	电路分析			4					
	20710701	数字电路技术基础 A Digital Electronics A	4	64	50	14	模拟电路技术基础			4					
	21109700	信号与系统 Signal and System	3.5	56	56		高等数学 复变函数				3.5				
	20701901	单片机原理及应用 A Single Chip Computer and Application A	3.5	56	46	10	数字电路技术基础 C 语言				3.5				
	小计 **Sum**		**51.5**	**904**	**802**	**102**		**10**	**16.5**	**18**	**7**	**0**	**0**	**0**	**0**
专业主干课 Main Specialty Courses	20715601	通信电子线路 A Communication Electronic Circuits A	3	48	40	8	模拟电路技术基础				3				
	22301601	现代可编程逻辑器件 A Modern Programming Logic Device A	2.5	40	20	20	数字电路技术基础				2.5				
	20725300	光电检测技术 A Photoelectron Detecting Technology A	3	48	32	16	模拟电路技术基础					3			
	21908201	数据结构 A Data Structure A	3.5	56	48	8	C 语言					3.5			
	20715700	数字信号处理 A Digital Signal Processing A	3.5	56	48	8	信号与系统					3.5			
	21909601	数字图像处理 A Digital Image Processing A	3	48	40	8	数字信号处理					3			
	20725400	信息论与编码 Information Theory and Coding	2.5	40	32	8	概率统计 信号与系统					2.5			
	21921002	计算机网络 B Computer Networks B	3	48	32	16						3			
	20715800	电磁场与电磁波 Electromagnetic Field and Waves	3	48	48		高等数学 大学物理						3		

课程类别 Course Classification	课程编号 Course Code	课程名称 Course Name	学分 Crs	学时 Hrs	学时分类 Class Hours		先修课程 Prerequisite Courses	学期学分分配 Semester Credits							
					讲课 Lec.	实验 Lab.		一 1st	二 2nd	三 3rd	四 4th	五 5th	六 6th	七 7th	八 8th
专业主干课 Main Specialty Courses	20716000	嵌入式系统及应用 Principle and Application of Embedded Systems	3	48	28	20	单片机原理及应用						3		
	20716102	DSP 技术及应用 B DSP Technologies and Application B	2.5	40	24	16	数字信号处理 C 语言						2.5		
	20725500	无线传感器网络原理及应用 Principle and Application of Wireless Sensor Networks	2.5	40	32	8	计算机网络						2.5		
	21108401	通信原理 A Communication Principle A	4	64	52	12	数字信号处理 信息论与编码						4		
	小计 **Sum**		**39**	**624**	**476**	**148**		**0**	**0**	**0**	**5.5**	**18.5**	**15**	**0**	**0**
专业选修课 Specialty Elective Courses		公共专业选修课程最低修满 4 个学分,专业方向选修课程最低修满 4 个学分,具体见专业选修课列表	8	128									4	4	
合计 **Sub-total**			**145**	**2400**	**2006**	**266**		**22**	**27**	**22**	**20.5**	**18.5**	**19**	**4**	**0**
实践环节 Practical Work	44300200	军事训练 Military Training	2	2 周				2							
	41919001	C 语言课程设计 A Course Design for C Language A	1.5	1.5 周			计算机机高级语言	1.5							
	40724604	金工实习 D Metalworking Practice D	1	1 周				1							
	40726000	电子线路教学实习 Electronic Circuit Practice	3	3 周						3					
	40726100	电子工程教学实习 Electronic Engineering Practice	3	3 周							3				
	40726200	信息工程教学实习 Information Engineer Practice	3	3 周								3			
	40726300	生产实习 Production Practice	2	2 周									2		
	40726400	应用系统设计教学实习 Application Systems Design Practice	3.5	3.5 周										3.5	
	40726500	毕业实习与毕业设计 Graduate Practice and Bachelor Thesis	16	16 周											16
	小计 **Sum**		**35**	**35 周**				**4.5**	**0**	**3**	**3**	**3**	**2**	**3.5**	**16**

课程类别 Course Classification	课程编号 Course Code	课程名称 Course Name	学分 Crs	学时 Hrs	学时分类 Class Hours		先修课程 Prerequisite Courses	学期学分分配 Semester Credits							
					讲课 Lec.	实验 Lab.		一 1st	二 2nd	三 3rd	四 4th	五 5th	六 6th	七 7th	八 8th
创新创业自主学习 Autonomous Learning	ZZ35000S	社会调查 Social Investigation	2												2
		其他(学科竞赛、发明创造、科研报告) Others (Contest, Invention, Innovation and Research Presentation)	3												
	小计 **Sum**		**5**												
总计 **Total**			**185**	**2400＋35 周**	**2006**	**266**		**26.5**	**27**	**25**	**23.5**	**21.5**	**21**	**7.5**	**16**
可开出专业选修课列表 Specialty Elective Courses	公共专业选修课程														
	20716300	片上系统设计 Design of System on a Chip	2	32	20	12	现代可编程逻辑器件						2		
	20725600	C＋＋程序设计 C＋＋ Programming	2	32			C 语言						2		
	20725700	操作系统 Operation Systems	3	48	40	8	C 语言 数据结构						3		
	20725900	嵌入式 Linux 软件设计 Embedded Linux Software Design	2			32	操作系统						2		
	20717500	虚拟仪器技术 Virtual Instrument Technology	2	32	16	16							2		
	20718603	传感器及检测技术 C Sensors and Measuring Technology C	2	32	24	8	模拟电路技术基础						2		
	20716700	光纤传感技术及应用 Optical Fiber Sensing Techniques and Applications	3	48	32	16							3		
	20712904	自动控制原理 D Automatic Control Theory D	2.5	40	40								2.5		
	20715900	机器人设计 Robotic Design	2.5	40	30	10							2.5		
	专业方向选修课程														
	20716800	现代通信系统 Modern Communication System	2	32	24	8	通信原理							2	
	20717400	现代交换技术 Technology of Modern Exchange	2	32	24	8								2	

课程类别 Course Classification	课程编号 Course Code	课程名称 Course Name	学分 Crs	学时 Hrs	学时分类 Class Hours		先修课程 Prerequisite Courses	学期学分分配 Semester Credits							
					讲课 Lec.	实验 Lab.		一 1st	二 2nd	三 3rd	四 4th	五 5th	六 6th	七 7th	八 8th
可开出专业选修课列表 Specialty Elective Courses	21915400	物联网技术概论 Introduction of Internet of Things	2	32	32		计算机网络							2	
	20711300	微波与天线 Microwave Techniques and Antenna	2.5	40	40		电磁场与电磁波						2.5		
	20716900	误差理论与数据处理 Error Theory and Data Processing	3	48	48									3	
	20717000	图像分析初步 Basic Concept of Image Analysis	2	32	16	16	数字图像处理							2	
	20717100	机器视觉 Machine Vision	2	32	32		数字图像处理							2	
	20717200	CDMA 通信原理 The Principle of CDMA Communication System	2	32	24	8	通信原理							2	
	20725800	宽带无线通信 Broadband Wireless Communications	2	32	32		通信原理							2	
	20711200	数字语音处理 Digital Speech Processing	2.5	40	30	10	数字信号处理							2.5	
	20731300	光电子信息技术 Optoelectronic Information Technology	2	32	32		机械制造工艺学 概率统计 B							2	

注：通识教育选修课学分和创新创业自主学习学分未列入具体学期。

电子信息工程专业课程分类统计

Course Category Statistics of Electronic and Information Engineering

课程学分 / 统计	通识教育课 Liberal Education Courses		学科基础课 Disciplinary Fundamental Courses	专业主干课 Main Specialty Courses	专业选修课 Specialty Elective Courses	实践环节 Practical Work	创新创业自主学习 Autonomous Learning	学时总计 Total Hours	学分总计 Total Credits
	必修 Compulsory	选修 Selective							
学时/学分 Hrs/Crs	632/34.5	192/12	824/51.5	624/39	128/8	35 周/35	5	2400＋35 周	185
学分所占比例 Proportion of Credits	25.13%		27.84%	21.08%	4.32%	18.92%	2.70%		100%

机械设计制造及其自动化专业培养方案

专业名称与代码：机械设计制造及其自动化　080202

专业培养目标：本专业培养具有良好的自然科学基础，良好的人文社会科学基础，较强的机械工程专业基础及工程应用能力，能在工业生产第一线从事机械设计、机械制造、机电产品开发、自动化研究与应用、运行管理和经营销售等方面的工作，具有良好的创新精神和实践能力的高级工程技术人才。

专业毕业要求

1.具有较扎实的自然科学基础，较好的人文、艺术和社会科学基础及正确运用本国语言、文字的能力，并能使用英语进行专业文献阅读与写作。

2.系统地掌握本专业领域技术基础理论，具有设计机械系统、部件和过程的能力；具有对于机械工程问题进行系统表达、建立模型、分析求解和论证的能力。

3.具有良好的知识迁移能力，能够集成机械工程中设计、加工制造、使用、维修、测试等诸方面知识，并应用于生产实际进行创新，具备较强的工程创新意识及创新能力。

4.具备系统思维和工程推理能力，具有对工程问题的基本认知和判断能力；具有机械及制造工艺的设计、实施和控制的初步能力。

5.具有良好的自我获取知识的能力和信息收集、处理能力，具有终生教育的意识和继续学习的能力。

6.具有在多学科团队中发挥作用的能力、较强的交流和沟通能力，具有一定的组织管理能力、价值效益意识，能够参与跨专业及国际性的竞争与合作。

7.面对社会和环境的各种变迁具有较强的调节及适应能力，良好的身体素质、心理素质，较强的社会责任感和良好的工程职业道德及社会服务意识。

8.熟悉本专业领域及相关行业的国家技术标准、政策、法律和法规。

毕业要求及实现途径

序号	毕业要求	实现途径(教学过程)
1	具有较扎实的自然科学基础，较好的人文、艺术和社会科学基础及正确运用本国语言、文字的能力，并能使用英语进行专业文献阅读与写作	①课堂教学：高等数学 B、概率统计 B、线性代数 B、大学物理 C、C 语言程序设计 B、自然科学类选修课、马克思主义基本原理、毛泽东思想与中国特色社会主义理论体系概论、中国近现代史纲要、大学英语、机械工程学科导论、军事理论、思想道德修养与法律基础 ②课外学习：中外文学名著选读、哲学讲座
2	系统地掌握本专业领域技术基础理论，具有设计机械系统、部件和过程的能力；具有对于机械工程问题进行系统表达、建立模型、分析求解和论证的能力	①课堂教学：机械工程学科导论、机械制图、电工与电子技术 A、理论力学、材料力学、流体力学基础、学科专题讲座、金属工艺学、金属材料及热处理、机械原理、互换性与测量技术、机械设计、单片机原理及应用 B、机械工程控制基础、液压传动、机电一体化技术、PLC 原理及应用、优化设计、机械 CAD/CAM、可靠性设计、可编程逻辑器件原理及应用、测试技术、数控技术 ②课外学习：大学生创新实验计划

序号	毕业要求	实现途径(教学过程)
3	具有良好的知识迁移能力,能够集成机械工程中设计、加工制造、使用、维修、测试等诸方面知识,并应用于生产实际进行创新	①课堂教学:机电一体化技术、机电传动控制、各类实践教学环节、机械创新设计、机器人技术 ②课外学习:机械创新大赛、大学生创新实验计划
4	具备系统思维和工程推理能力,具有对工程问题的基本认知和判断能力;具有机械及制造工艺的设计、实施和控制的初步能力	①课堂教学:机械制造工艺学、工程机械设计、钻探工程概论、机械制造装备技术、机电产品生产管理、机电产品质量控制、各类实践教学环节 ②课外学习:开放实验室项目、企业实践
5	具有良好的自我获取知识的能力和信息收集、处理能力,具有终生教育的意识和继续学习的能力	①课堂教学:毕业实习与毕业设计、社会调查 ②课外学习:大学生创新实验计划、专业辅修、第二学位
6	具有在多学科团队中发挥作用的能力、较强的交流和沟通能力,具有一定的组织管理能力、价值效益意识,能够参与跨专业及国际性的竞争与合作	①课堂教学:军事理论、思想道德修养与法律基础 ②课外学习:企业生产实践、机械创新大赛、机器人大赛、演讲与口才训练
7	面对社会和环境的各种变迁具有较强的调节及适应能力,良好的身体素质、心理素质,较强的社会责任感和良好的工程职业道德及社会服务意识	①课堂教学:马克思主义基本原理、毛泽东思想与中国特色社会主义理论体系概论、思想道德修养与法律基础、体育 ②课外学习:社会调查、大学生创新实验计划、各类校园知识讲座
8	熟悉本专业领域及相关行业的国家技术标准、政策、法律和法规	①课堂教学:思想道德修养与法律基础、机械制图 A ②课外学习:企业调研报告、发明创造、科研报告、文献检索讲座、各类校园知识讲座

主干学科:力学、机械工程、电子科学与技术。

主要课程:机械制图、理论力学、材料力学、机械原理、机械设计、互换性与测量技术、电工与电子技术、金属工艺学、金属材料及热处理、单片机原理及接口技术、测试技术、机械工程控制基础、液压传动、机械制造工艺学、工程机械设计、机电一体化技术、机械 CAD/CAM、数控技术。

主要专业实验:现代制造技术综合实验、测试与信息处理实验、机电一体化系统实验。

主要实践性教学环节:军训、金工实习、C 语言程序设计 B 课程设计、机械原理课程设计、机械设计课程设计、机械制造生产实习、机电一体化课程设计、数控技术实习、工程机械施工技术教学实习、毕业实习与毕业设计。

修业年限:四年。

授予学位:工学学士。

相近专业:过程装备与控制工程、材料成型及控制工程。

机械设计制造及其自动化专业培养目标及定位
基本能力
专业能力
创新能力
实践能力
自然科学基础
社会科学基础
人文基础
高等数学B
线性代数B
概率统计B
大学物理C
物理实验A
C语言程序设计B
马克思主义基本原理
毛泽东思想中国近现代史
体育
军事理论
社会科学等
中国近现代史
思想品德修养
大学英语
军事理论
人文艺术类选修课
基础课程
主干课程
机械制造方向
机电一体化方向
机械设计方向
理论力学
材料力学
电工与电子技术A
机械制图
机械工程学科导论
学科专题讲座
机器人技术
测试技术
机电传动控制
PLC原理及应用
可编程逻辑器件原理及应用
学科专题讲座
机械创新设计
钻探工程概论
机械CAD/CAM
优化设计
可靠性设计
模具设计
学科专题讲座
钻探工程概论
机械CAD/CAM
机电产品生产管理
机电产品质量控制模具设计
机械创新大赛
机器人大赛
大学生创新实验计划
开放实验室项目
企业实践
工程训练
大赛
金工实习A
C语言课程设计C
机械原理课程设计
机械设计课程设计A
机械制造生产实习
数控技术实习
工程机械施工技术
工程实习
机电一体化课程设计
毕业实习与毕业设计
金属工艺学
金属材料及热处理
机械原理
机械设计
机械工程控制基础
单片机原理及应用B
数控技术
互换性与测量技术
机电一体化技术
工程机械设计
机械制造工艺学
液压传动

Program for Mechanical Design, Manufacturing and Automation

Specialty and Code: Mechanical Design, Manufacturing and Automation 080202

Education Objective: This major aims to cultivate well-grounded, practical, creative engineers with solid foundation in both natural science and social science, who will not only have good professional skills of mechanical design, manufacturing and automation but also have excellent abilities of organization and management.

Graduation Requirements

1. Have a solid foundation of natural sciences and humanistic social science, use native language and characters correctly, and have an ability to command English when reading and writing professional literature.

2. Have a systematic knowledge of basic theory of technology in the professional field. To design mechanical system, components and processes. To deal with representation, mathematic modelling, solution and demonstration for the problems of mechanical engineering.

3. Develop strong abilities of knowledge transfer and the integration of various knowledge including design, manufacturing, application, maintenance and testing in mechanical engineering. Have strong consciousness of innovation and creative abilities in engineering.

4. Have an ability of systematic thinking and engineering reasoning, of basic knowledge and judgment of engineering problems. To have a preliminary ability of the design, implementation and control of machinery and manufacturing process.

5. Develop strong abilities of self-acquiring knowledge, information collection and processing. Awareness of lifelong education and the ability to continue learning.

6. Have the abilities to play a role in multi-disciplinary teams, strong communication skills, with certain organization and management abilities as well as the awareness of value benefits. Being capable of participating in multi-disciplinary and international competition and cooperation.

7. Have an ability of strong adjustment and adaptability when facing all kinds of social and environmental changes, and have good physical quality, psychological quality, strong social responsibility, good engineering occupation morals and social service consciousness.

8. Have an intimate knowledge of national technical standards, policies, laws and regulations in the professional field and related industries.

Graduation Requirements and Ways to Achieve

No.	Graduation Requirements	Ways to Achieve(Teaching Process)
1	To have a solid foundation of natural sciences and humanistic social science, use native language and characters correctly, and have a ability to command of English when reading and writing professional literature	①Classroom Teaching: Advanced Mathematics B, Probability and Mathematics Statistics B, Linear Algebra B, College Physics C, C Language Programming B, Natural Science, Principles of Marxism, Mao Tse-tung Thought and Introduction to the Theoretical System of Socialism with Chinese Characteristics, the Essentials of Modern Chinese History, College English, Introduction to Mechanical Engineering, Military Theory, Morality Education and Fundamentals of Law ②Out-of-class Learning: Selected Readings of Literature Works in Chinese, Lectures on Philosophy

No.	Graduation Requirements	Ways to Achieve(Teaching Process)
2	To have a systematic knowledge of basic theory of technology in the professional field. To design mechanical system, components and processes. To deal with representation, mathematic modeling, solution and demonstration for the problems of mechanical engineering	①Classroom Teaching: Introduction to Mechanical Engineering, Mechanical Drawing, Electrician and Electronic Technology A, Theoretical Mechanics, Mechanics of Materials, Hydromechanics, Subject Lecture, Metal Processing, Metal Material and Its Heat Treatment, Principle of Machinery, Interchangeability and Technical Measurement, Machine Design, Principle and Interface Technology of Single Chip Microprocessor B, Control Fundamental of Mechanical Engineering, Hydraulic Transmission, Technology of Mechanical Manufacture, Principle and Application of PLC, Optimization Design, Mechanical CAD/CAM, Reliability Design, Mould Design, Principle and Application of PLD, Testing Technology, NC Technology ② Out-of-class Learning: Innovative Experimental Program for Undergraduates
3	To transfer knowledge, integrate the knowledge of design, manufacture, application, maintenance, testing, and so on, in mechanical engineering design, and apply it to the innovation of practical production. To have a strong consciousness of innovation and creative ability in engineering	①Classroom Teaching: Mechatronics Project, Electromechanical Drive Control, Practical Work, Innovative Design for Machinery, Robot Technology ②Out-of-class Learning: Mechanical Innovation Competition, Innovative Experimental Program for Undergraduates
4	To have an ability of systematic thinking and engineering reasoning, of basic knowledge and judgment of engineering problems. To have a preliminary ability of the design, implementation and control of machinery and manufacturing process	①Classroom Teaching: Technology of Mechanical Manufacture, Technology of Mechanical Manufacture Equipment, Engineering Machine Design, Drilling Engineering Outline, Technology of Mechanical Manufacture Equipment, Electromechanical Product Production Management, Electromechanical Product Quality Control, Practical Work ②Out-of-class Learning: Open Laboratory Project, Companies Practice
5	To acquire knowledge strongly, collect and handle information in person. To have a consciousness of life-long education and an ability to keep on learning	①Classroom Teaching: Graduate Practice and Bachelor Thesis, Social Investigation ② Out-of-class Learning: Innovative Experimental Program for Undergraduates, Professional Minor, Second Degree

No.	Graduation Requirements	Ways to Achieve(Teaching Process)
6	To play a good role along with good communication and communication skills in the multidisciplinary team. To have an ability of organization and management and a consciousness of efficiency. To participate in inter-professional and international competition and cooperation	①Classroom Teaching: Military Theory, Morality Education and Fundamentals of Law ② Out-of-class Learning: The Practical Production of Enterprises, Mechanical Innovation Competition, Robot Competition, Speech and Eloquence Training
7	To have an ability of strong adjustment and adaptability when facing all kinds of social and environmental changes, and have good physical quality, psychological quality, strong social responsibility, good engineering occupation morals and social service consciousness	① Classroom Teaching: Principles of Marxism, Mao Tse-tung Thought and Introduction to the Theoretical System of Socialism with Chinese Characteristics, Morality Education and Fundamentals of Law, Physical Education ②Out-of-class Learning: Social Investigation, Innovative Experimental Program for Undergraduates, Various Campus Lectures
8	To have an intimate knowledge of national technical standards, policies, laws and regulations in the professional field and related industries	① Classroom Teaching: Morality Education and Fundamentals of Law, Mechanical Drawing A ② Out-of-class Learning: Investigation Report of the Enterprise, Invention and Creation, Research Report, Literature Retrieval Lectures, Various Campus Lectures

Major Disciplines: Mechanics, Mechanical Engineering, Electronic Science and Technology.

Main Courses: Mechanical Drawing, Theoretical Mechanics, Mechanics of Materials, Principle of Machinery, Mechanical Design, Interchangeability and Technical Measurement, Electrician and Electronic Technology, Metal Processing, Metal Material and Its Heat Treatment, Principle and Interface Technology of Single Chip Microprocessor, Control Fundamental of Mechanical Engineering, Hydraulic Transmission, Technology of Mechanical Manufacture, Testing Technology, Mechatronics Technology, Mechanical CAD/CAM, Engineering Machine Design, Mechatronics, NC Technology, etc.

Lab Experiments: Modern Manufacturing Technology Experiments, Measuring and Information Processing Experiments, Mechatronics System Experiments.

Practical Work: Military Training, Metalworking Practice, Course Design for C Programming Language B, Principle of Machinery Practice, Major Practice, Machine Design Practice, Numerical Control Technology Practice, Practice in Factory, Graduation Practice and Design.

Duration: four years.

Degree Granted: Bachelor of Engineering.

Related Specialties: Process Equipment and Control Engineering, Material Formation and Control Engineering.

机械设计制造及其自动化专业课程教学计划表

Course Descriptions of Mechanical Design, Manufacturing and Automation

课程类别 Course Classification		课程编号 Course Code	课程名称 Course Name	学分 Crs	学时 Hrs	学时分类 Class Hours		先修课程 Prerequisite Courses	学期学分分配 Semester Credits							
						讲课 Lec.	实验 Lab.		一 1st	二 2nd	三 3rd	四 4th	五 5th	六 6th	七 7th	八 8th
通识教育课 Liberal Education Courses	必修 ComPulsory	11706200	马克思主义基本原理 Principles of Marxism	3	48	48			3							
		11706500	毛泽东思想与中国特色社会主义理论体系概论 Introduction to Mao Tse-tung Thought and the Theoretical System of Socialism with Chinese Characteristics	4	64	64						4				
		11711800	中国近现代史纲要 The Essentials of Modern Chinese History	2	32	32					2					
		120002 * 0	思想道德修养与法律基础 Morality Education and Fundamentals of Law	3	48	48			1.5	1.5						
		113076 * 0	体育 Physical Education	4	144	144			1	1	1	1				
		109116 * 0	大学英语 College English	12	192	192			3	3	3	3				
		11918902	C 语言程序设计 B C Language Programming B	2.5	40	28	12		2.5							
		20724200	机械工程学科导论 Mechanical Introduction	1	16	16			1							
		14300100	军事理论 Military Theory	2	32	32			2							
	选修 Elective	总计 12 学分，含创新创业选修课学分，跨学科选修课不低于 6 学分。“形势与政策”课程作为限选课，由马克思主义学院实施		12	192	192										
		小计 **Sum**		**45.5**	**808**	**796**	**12**		**14**	**5.5**	**6**	**8**	**0**	**0**	**0**	**0**
学科基础课 Disciplinary Fundamental Courses		212127 * 2	高等数学 B Advanced Mathematics B	10	160	160			4	6						
		207247 * 0	机械制图 Mechanical Drawing	5.5	88	60	28		3	2.5						
		212130 * 3	大学物理 C College Physics C	6	96	96				3.5	2.5					
		212132 * 1	物理实验 A Physics Experiments A	3.5	56		56			2	1.5					
		207251 * 1	电工与电子技术 A Electrician and Electronic Technology A	7	112	98	14				3.5	3.5				

课程类别 Course Classification	课程编号 Course Code	课程名称 Course Name	学分 Crs	学时 Hrs	学时分类 Class Hours		先修课程 Prerequisite Courses	学期学分分配 Semester Credits							
					讲课 Lec.	实验 Lab.		一 1st	二 2nd	三 3rd	四 4th	五 5th	六 6th	七 7th	八 8th
学科基础课 Disciplinary Fundamental Courses	20508011	理论力学(工程力学 A1) Theoretical Mechanics	5	80	80					5					
	21212802	线性代数 B Linear Algebra B	2.5	40	40					2.5					
	20508021	材料力学(工程力学 A2) Mechanics of Materials	4.5	72	72						4.5				
	21213502	概率统计 B Probability and Mathematics Statistics B	2.5	40	40					2.5					
	小计 **Sum**		**46.5**	**744**	**646**	**98**		**7**	**14**	**17.5**	**8**	**0**	**0**	**0**	**0**
专业主干课 Main Specialty Courses	20714800	金属工艺学 Metal Processing	1.5	24	24		机械制图 金工实习 A		1.5						
	20707800	金属材料及热处理 Metal Material and Its Heat Treatment	2	32	26	6	材料力学 机械制图				2				
	20706500	机械原理 Principle of Machinery	3	48	40	8	理论力学 机械制图				3				
	20705100	互换性与技术测量 Interchangeability and Technical Measurement	2	32	26	6	机械制图 金工实习 A				2				
	20706200	机械设计 Machine Design	3.5	56	48	8	材料力学 机械原理					3.5			
	20706100	机械工程控制基础 Control Fundamental of Mechanical Engineering	2	32	26	6	理论力学 电工与电子技术 A					2			
	20701902	单片机原理及应用 B Principle and Interface Technology of Single Chip Microprocessor B	2.5	40	30	10	电工与电子技术 A					2.5			
	20727300	液压传动 Hydraulic Transmission	2.5	40	34	6	机械制图 机械设计等						2.5		
	20727400	机械制造工艺学 Technology of Mechanical Manufacture	2.5	40	30	10	金属材料及热处理 互换性与测量技术						2.5		
	20727500	工程机械设计 Engineering Machine Design	2.5	40	34	6	液压传动 机电一体化技术							2.5	
	20705700	机电一体化技术 Mechatronics Technology	2	32	26	6	电工与电子技术 A 单片机原理及应用 B							2	

课程类别 Course Classification	课程编号 Course Code	课程名称 Course Name	学分 Crs	学时 Hrs	学时分类 Class Hours		先修课程 Prerequisite Courses	学期学分分配 Semester Credits							
					讲课 Lec.	实验 Lab.		一 1st	二 2nd	三 3rd	四 4th	五 5th	六 6th	七 7th	八 8th
专业主干课 Main Specialty Courses	20727600	数控技术 NC Technology	2	32	28	4	机械工程控制基础 机械制造工艺学					2			
	小计 **Sum**		**28**	**448**	**372**	**76**		**0**	**1.5**	**0**	**7**	**10**	**5**	**4.5**	**0**
专业选修课 Specialty Elective Courses		具体见专业选修课列表	22	352											
合计 **Sub-total**			**142**	**2353**	**1814**	**186**		**21**	**21**	**23.5**	**23**	**10**	**5**	**4.5**	**0**
实践环节 Practical Work	44300200	军事训练 Military Training	2	2 周				2							
	40724601	金工实习 A Metalworking Practice A	4	4 周			机械制图		4						
	41919002	C 语言课程设计 B Course Design for C Language B	1.5	1.5 周			C 语言程序设计 B	1.5							
	40726800	机械原理课程设计 Mechanism Design Project	2	2 周			机械原理				2				
	40725201	机械设计课程设计 A Machine Design Project A	3	3 周			机械设计					3			
	40726900	机械制造生产实习 Practice in Factory	5	5 周			机械制造工艺学							5	
	40727000	数控技术实习 NC Technology Practice	1	1 周			数控技术					1			
	40727100	工程机械施工技术工程实习 Engineering Machine Practice	2	2 周			工程机械设计							2	
	40727200	机电一体化课程设计 Mechatronics Project	2	2 周			机电一体化技术							2	
	40726500	毕业实习与毕业设计 Graduate Practice and Bachelor Thesis	16	16 周											16
	小计 **Sum**		**38.5**	**38.5**				**3.5**	**4**	**0**	**2**	**4**	**0**	**9**	**16**

课程类别 Course Classification	课程编号 Course Code	课程名称 Course Name	学分 Crs	学时 Hrs	学时分类 Class Hours		先修课程 Prerequisite Courses	学期学分分配 Semester Credits							
					讲课 Lec.	实验 Lab.		一 1st	二 2nd	三 3rd	四 4th	五 5th	六 6th	七 7th	八 8th
创新创业自主学习 Autonomous Learning	ZZ35000S	社会调查 Social Investigation	2												
		其他(学科竞赛、发明创造、科研报告) Others (Contest, Invention, Innovation and Research Presentation)	3												
	小计 **Sum**		**5**												
总计 **Total**			**185.5**	**2352+38.5周**	**1814**	**186**		**24.5**	**25**	**23.5**	**25**	**14**	**5**	**13.5**	**16**
可开出专业选修课列表 Specialty Elective Courses	20519200	钻探工程概论 Introduction to Drilling Engineering	2	32	32		机械设计				2				
	20700800	测试技术 Testing Technology	2.5	40	34	6	概率统计 B 机械工程控制基础					2.5			
	20727700	机械创新设计 Innovative Design for Machinery	1	16	16	0	机械设计						1		
	20727800	机器人技术 Robot Technology	2	32	32	0	线性代数 B 测试技术					2			
	20717900	PLC 原理及应用 Principle and Application of PLC	1.5	24	12	12	电工与电子技术 A 单片机原理及应用 B					1.5			
	20705500	机电传动控制 Electromechanical Drive Control	2.5	40	30	10	电工与电子技术 A 单片机原理及应用 B						2.5		
	20706000	机械 CAD/CAM Mechanical CAD/CAM	2.5	40	20	20	机械设计 机械制造工艺学						2.5		
	20712200	优化设计 Optimization Design	1	16	12	4	机械设计					1			
	20708400	可靠性设计 Reliability Design	1	16	14	2	优化设计 概率统计 B						1		
	20718200	模具设计 Mould Design	2.5	40	30	10	机械制造工艺学 金属材料及热处理						2.5		

课程类别 Course Classification	课程编号 Course Code	课程名称 Course Name	学分 Crs	学时 Hrs	学时分类 Class Hours		先修课程 Prerequisite Courses	学期学分分配 Semester Credits							
					讲课 Lec.	实验 Lab.		一 1st	二 2nd	三 3rd	四 4th	五 5th	六 6th	七 7th	八 8th
可开出专业选修课列表 Specialty Elective Courses	20708300	可编程逻辑器件原理及应用 Principle and Application of PLD	2	32	24	8	单片机原理及应用 B					2			
	20513200	流体力学基础 Hydromechanics	2	32	28	4	理论力学 材料力学					2.5			
	20718300	学科专题讲座 Subject Lecture	1	16	16		机械工程学科导论						1		
	20705400	机电产品质量控制 Electromechanical Product Quality Control	1.5	24	20	4	互换性与测量技术 金属材料及热处理					1.5			
	20705300	机电产品生产管理 Electromechanical Product Production Management	2	32	32		机械制造工艺学 概率统计 B						2		

注：通识教育选修课学分和创新创业自主学习学分未列入具体学期。

机械设计制造及其自动化专业课程分类统计

Course Category Statistics of Mechanical Design, Manufacturing and Automation

课程学分 / 统计	通识教育课 Liberal Education Courses		学科基础课 Disciplinary Fundamental Courses	专业主干课 Main Specialty Courses	专业选修课 Specialty Elective Courses	实践环节 Practical Work	创新创业自主学习 Autonomous Learning	学时总计 Total Hours	学分总计 Total Credits
	必修 Compulsory	选修 Selective							
学时/学分 Hrs/Crs	616/33.5	192/12	744/46.5	448/28	352/22	38.5 周/38.5	5	2352＋38.5 周	185.5
学分所占比例 Proportion of Credits	24.53%		25.07%	15.09%	11.9%	20.75%	2.7%		100%

机械设计制造及其自动化(卓越工程师教育培养计划)专业培养方案

专业名称与代码:机械设计制造及其自动化　080202

专业培养目标: 本专业培养具有坚实的自然科学基础,良好的人文社会科学基础,较强的机械工程专业基础及工程应用能力,拥有良好的工程素质与国际视野,能在工业生产第一线从事机械设计、机械制造、机电产品开发、自动化研究与应用、运行管理和经营销售等方面工作,能够在工程技术领域参与国际竞争并凸显卓越创新能力的高素质卓越工程师。

专业毕业要求

1.具有较扎实的自然科学基础,较好的人文、艺术和社会科学基础及正确运用本国语言、文字的能力,并能使用英语进行专业文献阅读与写作。

2.系统地掌握本专业领域技术基础理论,具有设计机械系统、部件和过程的能力;具有对于机械工程问题进行系统表达、建立模型、分析求解和论证的能力。

3.具备一定的企业和社会环境下的综合工程实践经验,初步了解典型企业的管理运行模式、生产工艺流程、质量控制体系等。

4.具有较强的知识迁移能力,能够集成机械工程中设计、加工制造、使用、维修、测试等诸方面知识,并应用于生产实际进行创新,具备较强的工程创新意识及工程创新能力。

5.具备系统思维和工程推理能力,具有对工程问题的基本认知和判断能力;具有机械及制造工艺的设计、实施和控制的初步能力。

6.具有较强的自我获取知识的能力和信息收集、处理能力,具有终生教育的意识和继续学习的能力。

7.具有在多学科团队中发挥作用的能力、较强的交流和沟通能力,具有一定的组织管理能力、价值效益意识,能够参与跨专业及国际性的竞争与合作。

8.面对社会和环境的各种变迁具有较强的调节及适应能力,良好的身体素质、心理素质,较强的社会责任感和良好的工程职业道德及社会服务意识。

9.熟悉本专业领域及相关行业的国家技术标准、政策、法律和法规。

毕业要求及实现途径

序号	毕业要求	实现途径(教学过程)
1	具有较扎实的自然科学基础,较好的人文、艺术和社会科学基础及正确运用本国语言、文字的能力,并能使用英语进行专业文献阅读与写作	①课堂教学:高等数学 B、概率统计 B、线性代数 B、大学物理 C、C 语言程序设计 B、自然科学类选修课、马克思主义基本原理、毛泽东思想与中国特色社会主义理论体系概论、中国近现代史纲要、大学英语、机械工程学科导论、军事理论、思想道德修养与法律基础 ②课外学习:中外文学名著选读、哲学讲座

序号	毕业要求	实现途径(教学过程)
2	系统地掌握本专业领域技术基础理论,具有设计机械系统、部件和过程的能力;具有对于机械工程问题进行系统表达、建立模型、分析求解和论证的能力	①课堂教学:机械工程学科导论、机械制图、电工与电子技术 A、理论力学、材料力学、流体力学基础、学科专题讲座、金属工艺学、金属材料及热处理、机械原理、互换性与测量技术、机械设计、单片机原理及应用 B、机械工程控制基础、液压传动、PLC 原理及应用、优化设计、机械 CAD/CAM、可靠性设计、模具设计、可编程逻辑器件原理及应用、测试技术、数控技术 ②课外学习:大学生创新实验计划
3	具备一定的企业和社会环境下的综合工程实践经验,初步了解典型企业的管理运行模式、生产工艺流程、质量控制体系等	①课堂教学:机械制造工艺学、机械制造装备技术、机电产品生产管理、机电产品质量控制、各类实践教学环节 ②课外学习:开放实验室项目、企业实践
4	具有较强的知识迁移能力,能够集成机械工程中设计、加工制造、使用、维修、测试等诸方面知识,并应用于生产实际进行创新,具备较强的工程创新意识及工程创新能力	①课堂教学:机电一体化技术、机电传动控制、各类实践教学环节、机械创新设计、机器人技术 ②课外学习:机械创新大赛、大学生创新实验计划
5	具备系统思维和工程推理能力,具有对工程问题的基本认知和判断能力;具有机械及制造工艺的设计、实施和控制的初步能力	①课堂教学:机械制造工艺学、机械制造装备技术、工程机械设计、钻探工程概论、各类实践教学环节 ②课外学习:开放实验室项目、企业实践
6	具有较强的自我获取知识的能力和信息收集、处理能力,具有终生教育的意识和继续学习的能力	①课堂教学:毕业实习与毕业设计、社会调查 ②课外学习:大学生创新实验计划、专业辅修、第二学位
7	具有在多学科团队中发挥作用的能力、较强的交流和沟通能力,具有一定的组织管理能力、价值效益意识,能够参与跨专业及国际性的竞争与合作	①课堂教学:军事理论、思想道德修养与法律基础 ②课外学习:企业生产实践、机械创新大赛、机器人大赛、演讲与口才训练
8	面对社会和环境的各种变迁具有较强的调节和适应能力,良好的身体素质、心理素质,较强的社会责任感和良好的工程职业道德及社会服务意识	①课堂教学:马克思主义基本原理、毛泽东思想与中国特色社会主义理论体系概论、思想道德修养与法律基础、体育 ②课外学习:社会调查、大学生创新实验计划、各类校园知识讲座
9	熟悉本专业领域及相关行业的国家技术标准、政策、法律和法规	①课堂教学:思想道德修养与法律基础、机械制图 A ②课外学习:企业调研报告、发明创造、科研报告、文献检索讲座、各类校园知识讲座

主干学科:力学、机械工程、电子科学与技术。

核心课程:机械制图、理论力学、材料力学、机械原理、机械设计、互换性与测量技术、电工与电子技术、金属工艺学、金属材料及热处理、单片机原理及接口技术、机械工程控制基础、液压传动、机械制造工艺学、测试技术、PLC 原理及应用、机械制造装备技术、机械 CAD/CAM、工程机械设计、机电一体化技术、数控技术。

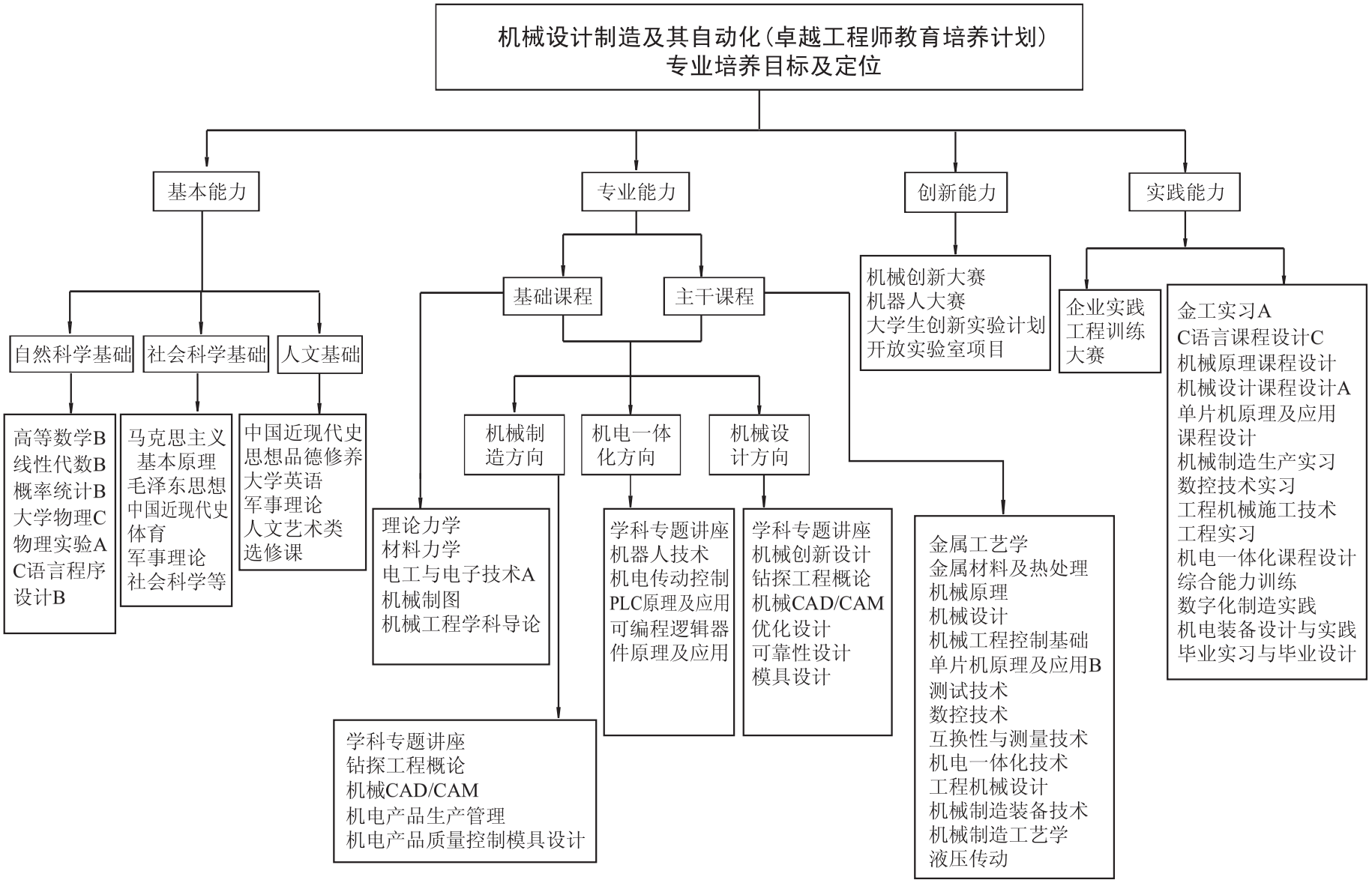
主要专业实验:现代制造技术综合实验、测试与信息处理实验、机电一体化系统实验。

主要实践性教学环节:军训、金工实习、C 语言程序设计 B 课程设计、机械原理课程设计、专业实践、机械设计课程设计、单片机原理及应用课程设计、机械制造生产实习、机电一体化课程设计、工程机械施工技术教学实习、数控技术实习、综合能力训练、数字化制造实践、机电装备设计与实践、毕业实习与毕业设计。

修业年限:四年,其中在企业累计实习 1 学年。

授予学位:工学学士。

相近专业:过程装备与控制工程、材料成型及控制工程。


机械设计制造及其自动化（卓越工程师教育培养计划）
专业培养目标及定位
基本能力
专业能力
创新能力
实践能力
自然科学基础
社会科学基础
人文基础
基础课程
主干课程
高等数学B
线性代数B
概率统计B
大学物理C
物理实验A
C语言程序设计B
马克思主义基本原理
毛泽东思想
中国近现代史
体育
军事理论
社会科学等
中国近现代史
思想品德修养
大学英语
军事理论
人文艺术类
选修课
机械制造方向
机电一体化方向
机械设计方向
理论力学
材料力学
电工与电子技术A
机械制图
机械工程学科导论
学科专题讲座
钻探工程概论
机械CAD/CAM
机电产品生产管理
机电产品质量控制模具设计
学科专题讲座
机器人技术
机电传动控制
PLC原理及应用
可编程逻辑器件原理及应用
学科专题讲座
机械创新设计
钻探工程概论
机械CAD/CAM
优化设计
可靠性设计
模具设计
金属工艺学
金属材料及热处理
机械原理
机械设计
机械工程控制基础
单片机原理及应用B
测试技术
数控技术
互换性与测量技术
机电一体化技术
工程机械设计
机械制造装备技术
机械制造工艺学
液压传动
机械创新大赛
机器人大赛
大学生创新实验计划
开放实验室项目
企业实践
工程训练
大赛
金工实习A
C语言课程设计C
机械原理课程设计
机械设计课程设计A
单片机原理及应用课程设计
机械制造生产实习
数控技术实习
工程机械施工技术
工程实习
机电一体化课程设计
综合能力训练
数字化制造实践
机电装备设计与实践
毕业实习与毕业设计

Program for Mechanical Design, Manufacturing and Automation (Excellent Engineer Training Program)

Specialty and Code: Mechanical Design, Manufacturing and Automation 080202

Education Objective: This major aims to cultivate well-grounded, practical, creative and all-round engineers with solid foundation in both natural science and social science, who will not only have strong professional skills of mechanical design, manufacturing and automation but also have excellent abilities of organization, management as well as the awareness of economic management and enterprising spirit. Students graduated from this major are competent to attend worldwide competing with prominent innovation ability in the area of engineering.

Graduation Requirements

1. Have a solid foundation of natural sciences and humanistic social science, use native language and characters correctly, and have an ability to command English when reading and writing professional literature.

2. Have a systematic knowledge of basic theory of technology in the professional field. To design mechanical system, components and processes. To deal with representation, mathematic modelling, solution and demonstration for the problems of mechanical engineering.

3. Have a certain comprehensively practical experience under enterprise and social environment, and have a preliminary understanding of management and operation modes of the typical enterprises, production process, system of quality control, and so on.

4. With strong abilities of knowledge transfer and the integration of various knowledge including design, manufacturing, application, maintenance and testing in mechanical engineering. Have strong consciousness of innovation and creative abilities in engineering.

5. Have an ability of systematic thinking and engineering reasoning, of basic knowledge and judgment of engineering problems. To have a preliminary ability of the design, implementation and control of machinery and manufacturing process.

6. With strong abilities of self-acquiring knowledge, information collection and processing. Awareness of lifelong education and the ability to continue learning.

7. Have the abilities to play a role in multi-disciplinary teams, strong communication skills, with certain organization and management abilities as well as the awareness of value benefits. Being capable of participating in multi-disciplinary and international competition and cooperation.

8. Have an ability of strong adjustment and adaptability when facing all kinds of social and environmental changes, and have good physical quality, psychological quality, strong social responsibility, good engineering occupation morals and social service consciousness.

9. Have an intimate knowledge of national technical standards, policies, laws and regulations in the professional field and related industries.

Graduation Requirements and Ways to Achieve

No.	Graduation Requirements	Ways to Achieve(Teaching Process)
1	To have a solid foundation of natural sciences and humanistic social science, use native language and characters correctly, and have a ability to command of English when reading and writing professional literature	①Classroom Teaching: Advanced Mathematics B, Probability and Mathematics Statistics B, Linear Algebra B, College Physics C, C Language Programming B, Natural Science, Principles of Marxism, Mao Tse-tung Thought and Introduction to the Theoretical System of Socialism with Chinese Characteristics, The Essentials of Modern Chinese History, College English, Introduction to Mechanical Engineering, Military Theory, Marketing And Sales B, Morality Education and Fundamentals of Law ②Out-of-class Learning: Selected Readings of Literature Works in Chinese, Lectures on Philosophy
2	To have a systematic knowledge of basic theory of technology in the professional field. To design mechanical system, components and processes. To deal with representation, mathematic modelling, solution and demonstration for the problems of mechanical engineering	①Classroom Teaching: Introduction to Mechanical Engineering, Mechanical Drawing, Electrician and Electronic Technology A, Theoretical Mechanics, Mechanics of Materials, Hydromechanics, Subject Lecture, Metal Processing, Metal Material and Its Heat Treatment, Principle of Machinery, Interchangeability and Technical Measurement, Machine Design, Principle and Interface Technology of Single Chip Microprocessor B, Control Fundamental of Mechanical Engineering, Hydraulic Transmission, Principle and Application of PLC, Optimization Design, Mechanical CAD/CAM, Reliability Design, Mould Design, Principle and Application of PLD, Testing Technology, NC Technology ② Out-of-class Learning: Innovative Experimental Program for Undergraduates
3	To have certain comprehensively practical experience under enterprise and social environment, and have a preliminary understanding of management and operation modes of the typical enterprises, production process, system of quality control, and so on	①Classroom Teaching: Technology of Mechanical Manufacture, Technology of Mechanical Manufacture Equipment, Electromechanical Product Production Management, Electromechanical Product Quality Control, Practical Work ②Out-of-class Learning: Open Laboratory Project, Companies Practice

No.	Graduation Requirements	Ways to Achieve(Teaching Process)
4	To transfer knowledge, integrate the knowledge of design, manufacture, application, maintenance, testing, and so on, in mechanical engineering design, and apply it to the innovation of practical production. To have a strong consciousness of innovation and creative ability in engineering	①Classroom Teaching: Mechatronics Project, Electromechanical Drive Control, Practical Work, Innovative Design for Machinery, Robot Technology ②Out-of-class Learning: Mechanical Innovation Competition, Innovative Experimental Program for Undergraduates
5	To have an ability of systematic thinking and engineering reasoning, of basic knowledge and judgment of engineering problems. To have a preliminary ability of the design, implementation and control of machinery and manufacturing process	①Classroom Teaching: Technology of Mechanical Manufacture, Technology of Mechanical Manufacture Equipment, Engineering Machine Design, Drilling Engineering Outline, Practical Work ②Out-of-class Learning: Open Laboratory Project, Companies Practice
6	To acquire knowledge strongly, collect and handle information in person. To have a consciousness of life-long education and an ability to keep on learning	① Classroom Teaching: Graduate Practice and Bachelor Thesis, Social Investigation ② Out-of-class Learning: Innovative Experimental Program for Undergraduates, Professional Minor, Second Degree
7	To play a good role along with good communication and communication skills in the multidisciplinary team. To have an ability of organization and management and a consciousness of efficiency. To participate in inter-professional and international competition and cooperation	①Classroom Teaching: Military Theory, Morality Education and Fundamentals of Law ②Out-of-class Learning: The Practical Production of Enterprises, Mechanical Innovation Competition, Robot Competition, Speech and Eloquence Training
8	To have an ability of strong adjustment and adaptability when facing all kinds of social and environmental changes, and have good physical quality, psychological quality, strong social responsibility, good engineering occupation morals and social service consciousness	①Classroom Teaching: Principles of Marxism, Mao Tsetung Thought and Introduction to the Theoretical, System of Socialism with Chinese Characteristics, Morality Education and Fundamentals of Law, Physical Education ② Out-of-class Learning: Social Investigation, Innovative Experimental Program for Undergraduates, Various Campus Lectures

No.	Graduation Requirements	Ways to Achieve(Teaching Process)
9	To have an intimate knowledge of national technical standards, policies, laws and regulations in the professional field and related industries	①Classroom Teaching: Morality Education and Fundamentals of Law, Mechanical Drawing A ②Out-of-class Learning: Investigation Report of the Enterprise, Invention and Creation, Research Report, Literature Retrieval Lectures, Various Campus Lectures

Major Disciplines: Mechanics, Mechanical Engineering, Electronic Science and Technology.

Main Courses: Mechanical Drawing, Theoretical Mechanics, Mechanics of Materials, Principle of Machinery, Mechanical Design, Interchangeability and Technical Measurement, Electrician and Electronic Technology, Metal Processing, Metal Material and Its Heat Treatment, Principle and Interface Technology of Single Chip Microprocessor, Control Fundamental of Mechanical Engineering, Hydraulic Transmission, Technology of Mechanical Manufacture, Testing Technology, Principle and Application of PLC, Technology of Mechanical Manufacturing Equipment, Mechanical CAD/CAM, Engineering Machine Design, Mechatronics, Technology NC Technology, etc.

Lab Experiments: Modern Manufacturing Technology Experiments, Measuring and Information Processing Experiments, Mechatronics System Experiments.

Practical Work: Military Training, Metalworking Practice, Course Design for C Language Programming B, Principle of Machinery Practice, Major Practice, Machine Design Practice, Design Project of Principle and Interface Technology of Single Chip Microprocessor, Practice in Factory, Mechatronics Design Practice, Engineering Machine Practice, NC Technology Practice, Comprehensive Abilities Training, Practice in Digital Manufacturing, Mechanical and Electrical Equipment Design and Practice, Graduation Practice and Design.

Duration: four years (one school year internship training in enterprise and practice base).

Degree Granted: Bachelor of Engineering.

Related Specialties: Process Equipment and Control Engineering, Material Formation and Control Engineering.

机械设计制造及其自动化(卓越工程师教育培养计划)
专业课程教学计划表

Course Descriptions of Mechanical Design, Manufacturing and Automation (Excellent Engineer Training Program)

课程类别 Course Classification		课程编号 Course Code	课程名称 Course Name	学分 Crs	学时 Hrs	学时分类 Class Hours		先修课程 Prerequisite Courses	学期学分分配 Semester Credits							
						讲课 Lec.	实验 Lab.		一 1st	二 2nd	三 3rd	四 4th	五 5th	六 6th	七 7th	八 8th
通识教育课 Liberal Education Courses	必修 Compulsory	11706200	马克思主义基本原理 Principles of Marxism	3	48	48			3							
		11706500	毛泽东思想与中国特色社会主义理论体系概论 Introduction to Mao Tse-tung Thought and the Theoretical System of Socialism with Chinese Characteristics	4	64	64						4				
		11711800	中国近现代史纲要 The Essentials of Modern Chinese History	2	32	32					2					
		120002 * 0	思想道德修养与法律基础 Morality Education and Fundamentals of Law	3	48	48			1.5	1.5						
		113076 * 0	体育 Physical Education	4	144	144			1	1	1	1				
		109116 * 0	大学英语 College English	12	192	192			3	3	3	3				
		11918902	C 语言程序设计 B C Language Programming B	2.5	40	28	12		2.5							
		20724200	机械工程学科导论 Mechanical Introduction	1	16	16			1							
		14300100	军事理论 Military Theory	2	32	32			2							
	选修 Elective	总计 12 学分,含创新创业选修课学分,跨学科选修课不低于 6 学分。“形势与政策”课程作为限选课,由马克思主义学院实施		12	192											
		小计 **Sum**		**45.5**	**808**	**604**	**12**		**14**	**5.5**	**6**	**8**	**0**	**0**	**0**	**0**
学科基础课 Disciplinary Fundamental Courses		212127 * 2	高等数学 B Advanced Mathematics	10	160	160			4	6						
		207247 * 0	机械制图 Mechanical Drawing	5.5	88	60	28		3	2.5						
		212130 * 3	大学物理 C College Physics C	6	96	96				3.5	2.5					
		212132 * 1	物理实验 A Physics Experiments A	3.5	56		56			2	1.5					

课程类别 Course Classification	课程编号 Course Code	课程名称 Course Name	学分 Crs	学时 Hrs	学时分类 Class Hours		先修课程 Prerequisite Courses	学期学分分配 Semester Credits							
					讲课 Lec.	实验 Lab.		一 1st	二 2nd	三 3rd	四 4th	五 5th	六 6th	七 7th	八 8th
学科基础课 Disciplinary Fundamental Courses	207251＊1	电工与电子技术 A Electrician and Electronic Technology A	7	112	98	14				3.5	3.5				
	20508011	工程力学(理论力学) A1 Engineering Mechanics (Theoretical Mechanics) A1	5	80	80					5					
	21212802	线性代数 B Linear Algebra B	2.5	40	40					2.5					
	20508021	工程力学(材料力学) A2 Engineering Mechanics (Mechanics of Materials) A2	4.5	72	72						4.5				
	21213502	概率统计 B Probability and Mathematics Statistics B	2.5	40	40					2.5					
	小计 **Sum**		**46.5**	**744**	**646**	**98**		**7**	**14**	**17.5**	**8**	**0**	**0**	**0**	**0**
专业主干课 Main Specialty Courses	20714800	金属工艺学 Metal Processing	1.5	24	24		机械制图 A 金工实习 A		1.5						
	20707800	金属材料及热处理 Metal Material and Its Heat Treatment	2	32	26	6	材料力学 机械制图 A				2				
	20706500	机械原理 Principle of Machinery	3	48	40	8	理论力学 机械制图				3				
	20705100	互换性与技术测量 Interchangeability and Technical Measurement	2	32	26	6	机械制图 金工实习 A				2				
	20706200	机械设计 Machine Design	3.5	56	48	8	材料力学 机械原理					3.5			
	20706100	机械工程控制基础 Control Fundamental of Mechanical Engineering	2	32	26	6	理论力学 电工与电子技术 A					2			
	20701902	单片机原理及应用 B Principle and Interface Technology of Single Chip Microprocessor B	2.5	40	30	10	电工与电子技术 A					2.5			
	20700800	测试技术 Testing Technology	2.5	40	34	6	概率统计 B 机械工程控制基础					2.5			
	20727300	液压传动 Hydraulic Transmission	2.5	40	34	6	机械制图 机械设计等						2.5		
	20727400	机械制造工艺学 Technology of Mechanical Manufacturing	2.5	40	30	10	金属材料及热处理 互换性与测量技术						2.5		

课程类别 Course Classification	课程编号 Course Code	课程名称 Course Name	学分 Crs	学时 Hrs	学时分类 Class Hours		先修课程 Prerequisite Courses	学期学分分配 Semester Credits							
					讲课 Lec.	实验 Lab.		一 1st	二 2nd	三 3rd	四 4th	五 5th	六 6th	七 7th	八 8th
专业主干课 Main Specialty Courses	20727900	机械制造装备技术 Technology of Mechanical Manufacturing Equipment	2	32	16	16	机械设计						2		
	20727500	工程机械设计 Engineering Machine Design	2.5	40	34	6	液压传动 机电一体化技术						2.5		
	20705700	机电一体化技术 Mechatronics Technology	2	32	26	6	电工与电子技术 A 单片机原理及应用 B						2		
	20727600	数控技术 NC Technology	2	32	28	4	机械制图 机械工程控制基础					2			
	小计 **Sum**		**32.5**	**520**	**422**	**98**		**0**	**1.5**	**0**	**7**	**12.5**	**11.5**	**0**	**0**
专业选修课 Specialty Elective Courses		具体见专业选修课列表	13	208											
合计 **Sub-total**			**137.5**	**2280**	**1672**	**208**		**21**	**21**	**23.5**	**23**	**12.5**	**11.5**	**0**	**0**
实践环节 Practical Work	44300200	军事训练 Military Training	2	2 周				2							
	40724601	金工实习 A Metalworking Practice A	4	4 周			机械制图		4						
	41919002	C 语言课程设计 B Course Design for C Language B	1.5	1.5 周			C 语言程序设计 B	1.5							
	40726800	机械原理课程设计 Mechanism Design Project	2	2 周			机械原理				2				
	40725201	机械设计课程设计 A Machine Design Project A	3	3 周			机械设计					3			
	40728000	单片机原理及应用课程设计 Design Project of Principle and Interface Technology of Single Chip Microprocessor	2	2 周			单片机原理及应用 B					2			
	40726900	机械制造生产实习 Practice in Factory	5	5 周			机械制造工艺学							5	
	40727000	数控技术实习 NC Technology Practice	2	2 周			数控技术					2			
	40727100	工程机械施工技术工程实习 Engineering Machine Practice	2	2 周			工程机械设计							2	

课程类别 Course Classification	课程编号 Course Code	课程名称 Course Name	学分 Crs	学时 Hrs	学时分类 Class Hours		先修课程 Prerequisite Courses	学期学分分配 Semester Credits							
					讲课 Lec.	实验 Lab.		一 1st	二 2nd	三 3rd	四 4th	五 5th	六 6th	七 7th	八 8th
实践环节 Practical Work	40727200	机电一体化课程设计 Mechatronics Project	2	2 周			机电一体化技术							2	
	40728100	综合能力训练 Comprehensive Abilities Training	6	6 周										6	
	40728200	数字化制造实践 Practice in Digital Manufacturing	4	4 周			机械 CAD/CAM							4	
	40728300	机电装备设计与实践 Mechanical and Electrical Equipment Design and Practice	4	4 周			机械制造装备技术							4	
	40726500	毕业实习与毕业设计 Graduate Practice and Bachelor Thesis	16	16 周											16
	小计 **Sum**		**55.5**	**55.5**				**3.5**	**4**	**0**	**2**	**7**	**0**	**23**	**16**
创新创业自主学习 Autonomous Learning	ZZ35000S	社会调查 Social Investigation	2												2
		其他(学科竞赛、发明创造、科研报告) Others (Contest, Invention, Innovation and Research Presentation)	3												
	小计 **Sum**		**5**												
总计 **Total**			**198**	**2280＋55.5 周**	**1672**	**208**		**24.5**	**25**	**23.5**	**25**	**19.5**	**11.5**	**23**	**16**
可开出专业选修课列表 Specialty Elective Courses	20519200	钻探工程概论 Introduction to Drilling Engineering	2	32	32		机械设计				2				
	20727700	机械创新设计 Innovative Design for Machinery	1	16	16	0	机械设计						1		
	20727800	机器人技术 Robot Technology	2	32	32	0	线性代数 测试技术					2			
	20717900	PLC 原理及应用 Principle and Application of PLC	1.5	24	12	12	电工与电子技术 A 单片机原理及应用 B					1.5			
	20705500	机电传动控制 Electromechanical Drive Control	2.5	40	30	10	电工与电子技术 A 单片机原理及应用 B						2.5		

课程类别 Course Classification	课程编号 Course Code	课程名称 Course Name	学分 Crs	学时 Hrs	学时分类 Class Hours		先修课程 Prerequisite Courses	学期学分分配 Semester Credits							
					讲课 Lec.	实验 Lab.		一 1st	二 2nd	三 3rd	四 4th	五 5th	六 6th	七 7th	八 8th
可开出专业选修课列表 Specialty Elective Courses	20706000	机械 CAD/CAM Mechanical CAD/CAM	2.5	40	20	20	机械设计 机械制造工艺学						2.5		
	20712200	优化设计 Optimization Design	1	16	12	4	机械设计					1			
	20708400	可靠性设计 Reliability Design	1	16	14	2	优化设计 概率统计 B						1		
	20718200	模具设计 Mould Design	2.5	40	30	10	机械制造工艺学 金属材料及热处理						2.5		
	20708300	可编程逻辑器件原理及应用 Principle and Application of PLD	2	32	24	8	单片机原理及应用 B					2			
	20718300	学科专题讲座 Subject Lecture	1	16	16	0	机械工程学科导论						1		
	20705400	机电产品质量控制 Electromechanical Product Quality Control	1.5	24	20	4	互换性与测量技术 金属材料及热处理					1.5			
	20705300	机电产品生产管理 Electromechanical Product Production Management	2	32	32		机械制造工艺学、概率统计 B						2		
	20513200	流体力学基础 Hydromechanics	2	32	28	4	理论力学 材料力学					2			

注：通识教育选修课学分和创新创业自主学习学分未列入具体学期。

机械设计制造及其自动化(卓越工程师教育培养计划)专业课程分类统计

Course Category Statistics of Mechanical Design, Manufacturing and Automation (Excellent Engineer Training Program)

课程学分 / 统计	通识教育课 Liberal Education Courses		学科基础课 Disciplinary Fundamental Courses	专业主干课 Main Specialty Courses	专业选修课 Specialty Elective Courses	实践环节 Practical Work	创新创业自主学习 Autonomous Learning	学时总计 Total Hours	学分总计 Total Credits
	必修 Compulsory	选修 Selective							
学时/学分 Hrs/Crs	616/33.5	192/12	744/46.5	520/32.5	208/13	55.5 周/55.5	5	2280+55.5 周	198
学分所占比例 Proportion of Credits	22.98%		23.48%	16.41%	6.57%	28.03%	2.53%		100%

工业设计专业培养方案

专业名称与代码：工业设计专业　080205

专业培养目标：培养专业基础扎实、思维活跃、创新意识强，视野宽广、表现技能熟练、技术整合能力强，具有较强的发现问题和综合解决问题的能力，能够在不断变化的产业格局下为企事业单位、专业设计部门从事工业产品开发与创新设计、交互与体验设计的复合型工业设计人才。

专业培养要求：本专业学生需要系统学习工业设计的基础理论与专业知识，前期打好宽厚基础，强化通识教育，后期突出宽口径专业教育和多学科交叉整合的人才培养模式，接受产品设计与表现的基本训练，能应用设计原理和方法综合处理产品功能、形态、色彩、结构、材料、工艺、环境、市场的关系，整合设计、技术、营销来实现工业产品的创新。

毕业生应获得以下几方面的知识和能力

1.具有扎实的自然科学基础，具有较好的人文、艺术、社会科学、市场经济、管理、环保等基础知识。

2.系统地掌握本专业领域宽广的技术理论基础知识，主要包括工业设计工程基础、设计表现基础、设计理论、人机工程、材料及加工工艺、计算机辅助设计、市场经济及企业管理等基础知识。

3.具有新产品研究与开发的初步能力，有较强的表现技能、动手能力、美学鉴赏能力和创新设计能力，具有较强的计算机应用能力及外语应用能力。

4.具有较强的自学能力、知识更新能力、协作能力和较高的综合素质。

5.熟悉本专业领域内工业产品的发展现状，了解学科前沿与发展趋势。

毕业要求及实现途径

序号	毕业要求	实现途径(教学过程)
1	具有较扎实的自然科学基础，较好的人文、艺术和社会科学基础及正确运用本国语言、文字的能力，并能使用英语进行专业文献阅读与写作	①课堂教学：高等数学 B、线性代数 C、大学物理 C、C 语言程序设计、人文艺术类选修课、马克思主义基本原理、毛泽东思想与中国特色社会主义理论体系概论、中国近现代史纲要、大学英语、机械工程学科导论、物理实验 B、军事理论、思想道德修养与法律基础、体育 ②课外学习：中外文学名著选读、哲学讲座
2	系统地掌握本专业领域的基础理论知识，主要包括设计方法学、金属工艺学、构成原理、电工及电子技术 C、工程力学 B、工业设计史、工业设计概论、机械原理、产品设计原理、机械设计等基础知识	①课堂教学：设计方法学、金属工艺学、构成原理、数字电路技术基础 A、工程力学 B、工业设计史、工业设计概论、机械原理、产品设计原理、机械设计、产品结构设计、人机工程学、材料工艺学、机电创新设计、优化设计、产品色彩设计、产品符号语义设计、模具设计、产品摄影制作、PLC 原理及应用、图案设计基础、平面广告设计、机电一体化技术、设计作品赏析、展示设计 ②课外学习：大学生创新实验计划
3	具有本专业必需的制图、手绘、实验、设计、文献检索和基本工艺操作等基本技能	①课堂教学：机械制图 A、综合素描 B、产品设计表达、造型设计基础、金工实习 B、计算机高级课程设计 C、各类实践教学环节 ②课外学习：开放实验室项目、全国大学生先进成图技术与产品信息建模创新大赛、企业实践

序号	毕业要求	实现途径(教学过程)
4	具有初步的产品调研、开发、设计一般实体产品、交互产品的设计能力与管理能力	①课堂教学:计算机辅助设计、模型制作、认知实习、产品形态设计、体验设计、企业形象设计、智能产品设计概论、交互设计、综合造型训练、产品系统设计、版式设计、各类实践教学环节 ②课外学习:全国或湖北省设计类大赛、全国或湖北省工业设计大赛、开放实验室项目、大学生创新实验计划、企业实践、机械创新大赛
5	具有较强的自学能力和创新意识	①课堂教学:毕业实习与毕业设计、社会调查 ②课外学习:大学生创新实验计划、机械创新大赛、全国工业设计大赛、各类校园知识讲座、专业辅修、第二学位

主干学科:设计艺术学、机械工程。

核心课程:机械制图、机械原理、机械设计、金属工艺学、设计基础、工业设计概论、造型设计基础、人机工程学、产品设计原理、设计方法学、计算机辅助设计、产品结构设计、工业设计史、构成原理、设计素描、结构素描、产品形态设计、产品设计表达、展示设计、模型制作、产品系统设计、智能产品设计概论、企业形象设计、产品摄影制作等。

主要专业实验:模型制作实验、摄影制作实验、产品制作实验、造型设计实验、平面创意实验、虚拟人机工程实验等。

主要实践性教学环节:劳动教育、金工实习、机械原理课程设计、机械设计课程设计、计算机辅助设计课程设计、构成原理教学实习、C 语言课程设计、艺术采风(写生实习)、产品创新设计实践、认知实习、生产实习、毕业实习与毕业设计等。

修业年限:四年。

授予学位:工学学士。

相近专业:机械设计制造及其自动化、交互设计、珠宝设计、动画设计。

Program for Industry Design

Specialty and Code: Industry Design 080205

Educational Objective: Our program is aimed at laying students a solid professional foundation, activating their mind, enhancing their creativity, broadening their horizon, developing their professional skills, improving their ability to integrate techniques, thus, equipping them with the ability to find and solve problems. With that aim, we will cultivate interdisciplinary talent who is qualified to face the changing industrial pattern and work in enterprises and design departments for industrial design development and innovation design as well as interactive design and customer experience design.

Graduation Requirements: The major of Industrial Design requires students to obtain systematic and basic industrial design theory and related expertise. For early stage, students will lay a solid professional foundation and get general education. For later stage, it will emphasize on implementing wide-caliber education and fostering talent in multidisciplinary with integrating techniques, meanwhile, the basic training of product design and skill performance will be taught to students, who will be able to apply design theory and method to cope with design and related problems concerning product function, product form, color, structure, material, craftsmanship, environment, and market and realize the creativity of integrating design with technology and marketing.

Required Knowledge and Ability

1. Have solid nature science foundation and basic knowledge of humanity, art, social science, market economy, management, and environmental protection.

2. Get systematically technical and theory knowledge of this major, including basic of industrial design engineering, basics of skill performance, design theory, man-machine engineering, material and machining technology, CAD, basic of marketing economy and enterprises administration.

3. Have the preliminary ability to do researches and develop new product. Equipped with good skill performance, operational ability, aesthetic and interpretive understanding ability, sense of innovation and proficient CAD skills and English.

4. Have the ability of self-learning, updating knowledge and cooperating. Have superior comprehensive quality.

5. Be familiar with the current industrial product, be aware of the leading edge and the developing trade of this industry.

Graduation requirements and ways to achieve

No.	Graduation Requirements	Ways to Achieve(Teaching Process)
1	Has a solid natural science foundation, good humanities, arts, and social science foundation and ability to use their own language, words correctly, and can use foreign language professional for literature reading and writing	①Classroom Teaching: Advanced Mathematics B, Linear Algebra C, College Physics C, C Language Programming, Optional Course of Humanities Arts, Basic Principle of Marxism, Introduction to Mao Tse-tung Thought and the Theoretical System of Socialism with Chinese Characteristics, the Essentials of Modern Chinese History, College English, Introduction to Mechanical Engineering Disciplines, Physics Experiments B, Military Theory, Morality Education and Fundamentals of Law, Physical Education ② Out-of-class Learning: Chinese and Foreign Literature, Philosophical Lectures

No.	Graduation Requirements	Ways to Achieve(Teaching Process)
2	You should systematically master the basic theory in the field of professional knowledge, mainly including The Design Methodology, Metallurgical Technology, Constitution Principle, Electrician and Electronic Technology C, Engineering Mechanics B, the History of Industrial Design, Introduction to Industrial Design, Mechanical Principle, Product Design Principle, Mechanical Design and so on	① Classroom Teaching: Design Methodology, Metallurgical Technology, Constitution Principle, Engineering Mechanics B, Digital Electronics A, the History of Industrial Design, Introduction to Industrial Design, Mechanical Principle, Product Design Principle, Mechanical Design, Product Structure Design, Ergonomics, Material Technician, Electrical and Mechanical Innovation Design, Optimization Design, Product Color Design, Symbolic Semantic Product Design, Molding Design, Product Photography, the Principle and Application of PLC, Graphic Design, Print AD Design, Mechanical and Electrical Integration Technology, Design Works Appreciation, Display Design ② Out-of-class Learning: College Students Innovation Experiment Program
3	This professional required drawings, hand-painted, experimental technique, design, literature retrieval and the basic operation and other basic skills	①Classroom Teaching: Mechanical Drawing A, Sketch Expression B, Product Design Expression, Form Design Foundation, Metalworking Practice B, Senior Computer Curriculum Design C, all kinds of practice teaching links ②Out-of-class Learning: Opening Laboratory Project, the National College Students' Drawing Competition, the Enterprise Practices
4	Has the preliminary ability of product research, development, interactive products design and general physical product development management	① Classroom Teaching: Computer Aided Design, Model Making, Cognitive Practice, Product form Design, Experience Design, Corporate Image Design, Smart Products Design Introduction, Interaction Design, Comprehensive Training, Production System Design, Layout Design, All Kinds of Practice Teaching Link ②Out-of-class Learning: Design Industrial Competition, the National University Students Innovation Experiment Program, Enterprise Practice, Mechanical Innovation Competition, the National University Industrial Design Competition
5	Has the strong ability of self-study and innovation consciousness	①Classroom Teaching: Graduation Practice, Graduation Design, Social Investigation ② Out-of-class Learning: College Students' Innovative Pilot Scheme Design, Mechanical Innovation Competition, the National University Industrial Design Competition, All Kinds of Knowledge about Campus, Professional Minor, the Second Degree

Major Disciplines: Art and Design, Mechanical Engineering.

Main Courses: Mechanical Drawing, Mechanical Principle, Mechanical Design, Metal Technology, Design Foundation, Introduction to Industry Design, Ergonomics, Product Design Principle, Design Methodology, Computer Aided Design, Product Structure Design, Industrial Design History, Composing Principle, Design Drawings, Structure Drawings, Product form Design, Expression of Product Design, Display Design, Model Making Product System Design, Smart Products Design Introduction, Corporate Image Design, Product Photography, etc.

Lab Experiments: Model Making, Photograph Making, Form Design Making, Product Design, Planner Making, Virtual Ergonomic Making.

Practical Work: Labor Education, Metalworking Practice, Mechanical Design Project, Mechanism Design Project, CAD for Design, Composing Principle Practice, C Language Programming, Outdoor Sketching, Product Innovation Design Practice, Cognition Practice, Graduation Practice, Graduation Thesis.

Duration: four years.

Degree Granted: Bachelor of Engineering.

Related Specialties: Mechanical Design, Manufacturing and Automation, Interaction Design, Jewel Design, Animation Design.

工业设计专业培养目标与课程设置
基本能力
专业能力
创新能力
实践能力
自然科学基础
社科基础
人文基础
专业基础课
专业必修课程
专业选修课程
高等数学B
线性代数C
概率论与数理统计B
大学物理实验B
C语言程序设计
马克思主义基本原理、毛泽东思想、中国近现代史、军事理论、社会科学等选修课
中国近代史、思修、体育、大学英语、军事理论、人文经管等选修课
产品结构设计
造型设计基础
交互设计
人机工程学
材料工艺学
工业设计概论
计算机辅助设计
产品设计表达
模型制作
机械原理
产品设计原理
机械设计
产品结构设计
造型设计基础
交互设计
人机工程学
材料工艺学
机电创新设计
PLC原理及应用
优化设计图案设计基础
产品色彩设计产品系统设计
产品符号语义设计模具设计
产品形态设计平面广告设计
体验设计企业形象设计
产品摄影制作智能产品设计概论
机电一体化技术设计作品赏析
展示设计
单片机原理及应用
全国、湖北省设计类大赛
全国、湖北省工业设计大赛
全国大学生先进成图技术与产品信息建模创新大赛
大学生创新实验计划
企业实践
产品设计大赛
金工实习B
C语言课程设计
认知实习
综合造型训练
机械原理课程设计
交互设计课程实践
机械设计课程设计B
艺术采风
产品创新设计实践
生产实习
本科毕业设计

工业设计专业课程教学计划表

Course Descriptions of Industry Design

课程类别 Course Classification		课程编号 Course Code	课程名称 Course Name	学分 Crs	学时 Hrs	学时分类 Class Hours		先修课程 Prerequisite Courses	学期学分分配 Semester Credits							
						讲课 Lec.	实验 Lab.		一 1st	二 2nd	三 3rd	四 4th	五 5th	六 6th	七 7th	八 8th
通识教育课 Liberal Education Courses	必修 ComPulsory	11706200	马克思主义基本原理 Principles of Marxism	3	48	48					3					
		11706500	毛泽东思想与中国特色社会主义理论体系概论 Introduction to Mao Tse-tung Thought and the Theoretical System of Socialism with Chinese Characteristics	4	64	64						4				
		11711800	中国近现代史纲要 The Essentials of Modern Chinese History	2	32	32							2			
		120002 * 0	思想道德修养与法律基础 Morality Education and Fundamentals of Law	3	48	48			1.5	1.5						
		113076 * 0	体育 Physical Education	4	144	144			1	1	1	1				
		109116 * 0	大学英语 College English	12	192	192			3	3	3	3				
		11918902	C 语言程序设计 B C Language Programming B	2.5	40	28	12			2.5						
		20724200	机械工程学科导论 Mechanical Introduction	1	16	16	0		1							
		14300100	军事理论 Military Theory	2	32	32	0		2							
	选修 Elective	总计 12 学分，含创新创业选修课学分，跨学科选修课不低于 6 学分。“形势与政策”课程作为限选课，由马克思主义学院实施		12	192											
		小计 **Sum**		**45.5**	**808**	**604**	**12**		**8.5**	**8**	**7**	**8**	**2**	**0**	**0**	**0**
学科基础课 Disciplinary Fundamental Courses		21212803	线性代数 C Linear Algebra C	2	32	32	0				2					
		212127 * 2	高等数学 B Advanced Mathematics B	10	160	160	0		4	6						
		207247 * 0	机械制图 Mechanical Drawing	5.5	88	68	20		3	2.5						
		207243 * 0	综合设计素描 Structure Sketch	3	8	48	0		1.5	1.5						
		20714800	金属工艺学 Metal Processing	1.5	24	24	0		1.5							

课程类别 Course Classification	课程编号 Course Code	课程名称 Course Name	学分 Crs	学时 Hrs	学时分类 Class Hours		先修课程 Prerequisite Courses	学期学分分配 Semester Credits							
					讲课 Lec.	实验 Lab.		一 1st	二 2nd	三 3rd	四 4th	五 5th	六 6th	七 7th	八 8th
学科基础课 Disciplinary Fundamental Courses	212130＊3	大学物理 C College Physics C	6	96	96	0			3	3					
	21213202	物理实验 B Physical Experiments B	2	32	0	32			2						
	207249＊0	构成原理 Composing Principle	4	64	40	24			2	2					
	20720000	设计方法学 Design Methodology	1.5	24	12	12					1.5				
	20710701	数字电路技术基础 A Digital Electronics A	4	64	50	14					4				
	20508002	工程力学 B Engineering Mechanics B	5	80	80	0				5					
	20720100	工业设计史 Industry Design History	1.5	24	20	4						1.5			
	小计 **Sum**		**46**	**736**	**630**	**106**		**10**	**17**	**12**	**5.5**	**1.5**	**0**	**0**	**0**
专业主干课 Main Specialty Courses	20704500	工业设计概论 Introduction to Industry Design	1.5	24	24	0		1.5							
	20729600	计算机辅助设计 CAD for Design	2.5	40	0	40				2.5					
	207297＊0	产品设计表达 Product Design Expression	2.5	40	0	40				1.5	1				
	207216＊0	模型制作 Model Making	3	48	0	48				1			2		
	20717600	机械原理 Principle of Machinery	3.5	56	40	16					3.5				
	20701100	产品设计原理 Product Design Principle	2	32	20	12					2				
	20717800	机械设计 Machine Design	4	64	46	18						4			
	20720400	产品结构设计 Product Structure Design	2	32	28	4	机械原理					2			
	20720200	造型设计基础 Form Design Foundation	2	32	20	12					2				
	20730900	交互设计 Interaction Design	2	32	16	16						2			
	20709600	人机工程学 Ergonomics	2	32	20	12							2		
	20723800	材料工艺学 Material Technician	2	32	24	8							2		
	小计 **Sum**		**29**	**464**	**238**	**226**		**1.5**	**0**	**5**	**8.5**	**8**	**6**	**0**	**0**

课程类别 Course Classification	课程编号 Course Code	课程名称 Course Name	学分 Crs	学时 Hrs	学时分类 Class Hours		先修课程 Prerequisite Courses	学期学分分配 Semester Credits							
					讲课 Lec.	实验 Lab.		一 1st	二 2nd	三 3rd	四 4th	五 5th	六 6th	七 7th	八 8th
专业选修课 Specialty Elective Courses		具体见专业选修课列表	24	384											
合计 **Sub-total**			**144.5**	**2392**	**1472**	**344**		**20**	**25**	**24**	**22**	**11.5**	**6**	**0**	**0**
实践环节 Practical Work	44300200	军事训练 Military Training	2	2 周				2							
	40724602	金工实习 B Metalworking Practice B	2	2 周				2							
	41919002	C 语言课程设计 B Course Design for C Language	1.5	1.5 周					1.5						
	40728400	认知实习 Cognition Practice	1	1 周						1					
	40728500	综合造型训练 Comprehensive Modeling Training	1	1 周							1				
	40726800	机械原理课程设计 Mechanism Design Project	2	2 周							2				
	40728600	交互设计课程实践 Interaction Design Practice	1	1 周								1			
	40725202	机械设计课程设计 B Mechanical Design Project B	2	2 周								2			
	40728700	艺术采风 Outdoor Sketching	2	2 周								2			
	40728800	产品创新设计实践 Product Development Design	1	1 周									1		
	40728900	生产实习 Industrial Practice	2.5	2.5 周										2.5	
	40726500	毕业实习与毕业设计 Practice for Graduate and Bachelor Thesis	16	16 周											16
	小计 **Sum**		**34**	**34 周**	**0**	**0**		**4**	**1.5**	**1**	**3**	**5**	**1**	**2.5**	**16**

课程类别 Course Classification	课程编号 Course Code	课程名称 Course Name	学分 Crs	学时 Hrs	学时分类 Class Hours		先修课程 Prerequisite Courses	学期学分分配 Semester Credits							
					讲课 Lec.	实验 Lab.		一 1st	二 2nd	三 3rd	四 4th	五 5th	六 6th	七 7th	八 8th
Autonomous Learning 创新创业自主学习	ZZ35000S	社会调查 Social Investigation	2												2
		其他(学科竞赛、发明创造、科研报告) Others (Contest, Invention, Innovation and Research Presentation)	3												
	小计 **Sum**		**5**												
总计 **Total**			**183.5**	**2392＋34 周**	**1472**	**344**		**24**	**26.5**	**25**	**25**	**16.5**	**7**	**2.5**	**16**
Specialty Elective Courses 可开出专业选修课列表	20705600	机电创新设计 M & E Innovative Design	1	16	16	0	机械原理					1			
	20712200	优化设计 Optimization Design	1	16	12	4								1	
	20700900	产品色彩设计 Product Color Design	1.5	24	16	8						1.5			
	20730800	产品符号语义设计 Product Semantics Design	1.5	24	16	8							1.5		
	20718200	模具设计 Model Design	2.5	40	30	10							2.5		
	20701400	产品形态设计 Product Pattern Design	1.5	24	20	4					1.5				
	20729900	体验设计 Experience Design	1.5	24	20	4								1.5	
	20701200	产品摄影制作 Product Photography Manufacturing	1.5	24	12	12							1.5		
	20717900	PLC 原理及应用 Principle and Application of PLC	1.5	24	12	12								1.5	
	20701901	单片机原理及应用 A Single Chip Computer and Application A	3.5	56	46	10	数字电路设计基础 A					3.5			
	20729800	图案设计基础 Design Foundation	1.5	24	16	8						1.5			
	20721700	产品系统设计 Product System Design	1.5	24	12	12						1.5			
	20723900	平面广告设计 2D Ad. Design	1.5	24	12	12							1.5		

课程类别 Course Classification	课程编号 Course Code	课程名称 Course Name	学分 Crs	学时 Hrs	学时分类 Class Hours		先修课程 Prerequisite Courses	学期学分分配 Semester Credits							
					讲课 Lec.	实验 Lab.		一 1st	二 2nd	三 3rd	四 4th	五 5th	六 6th	七 7th	八 8th
可开出专业选修课列表 Specialty Elective Courses	20730100	版式设计 Layout Design	1.5	24	12	12				1.5					
	20709200	企业形象设计 CIS	1.5	24	16	8								1.5	
	20730000	智能产品设计概论 Smart Products Design Introduction	1.5	24	16	8	数字电路设计基础 A 单片机原理及应用 A 产品结构设计						1.5		
	20705700	机电一体化技术 Mechanical & Electrical Integration	2	32	26	6	数字电路设计基础 A 单片机原理及应用 A							2	
	20710100	设计作品赏析 Design Works Appreciation	1.5	24	20	4		1.5							
	20721500	展示设计 Demonstration Design	1.5	24	12	12								1.5	

注：通识教育选修课学分和创新创业自主学习学分未列入具体学期。

工业设计专业课程分类统计

Course Category Statistics of Industry Design

课程学分 / 统计	通识教育课 Liberal Education Courses		学科基础课 Disciplinary Fundamental Courses	专业主干课 Main Specialty Courses	专业选修课 Specialty Elective Courses	实践环节 Practical Work	创新创业自主学习 Autonomous Learning	学时总计 Total Hours	学分总计 Total Credits
	必修 Compulsory	选修 Selective							
学时/学分 Hrs/Crs	616/33.5	192/12	736/46	464/29	384/24	34 周/34	5	2392＋34 周	183.5
学分所占比例 Proportion of Credits	24.80%		25.06%	15.80%	13.08%	18.53%	2.72%		100%

通信工程专业培养方案

专业名称与代码:通信工程　080703

专业培养目标:本专业培养具有良好素质和创新能力,德智体美全面发展,系统地掌握通信技术、通信系统和网络、计算机技术的基本理论、方法和技能,并通过通信工程实践的基本训练,具备一定的通信系统硬件和软件的设计及开发能力,能在通信及相关领域从事研究、开发、设计、制造、运营和管理的高级工程技术人才。

专业毕业要求

1. 掌握通信领域内的基本理论和基本知识。

2. 掌握数据通信、移动通信、无线通信、光通信等通信技术。

3. 掌握计算机的基本应用技术和软件开发技术。

4. 熟悉各类通信系统及通信网的通信方式及系统体系结构,并了解有关的技术标准、规格、指标要求、通信协议等知识。

5. 初步具备通信系统及通信网系统设计、集成、调测、应用及其硬、软件设计与开发的能力。

6. 了解通信领域最新进展与发展动态,掌握文献检索和资料查询方法,具有一定的创新能力。

毕业要求及实现途径

序号	毕业要求	实现途径(教学过程)
1	掌握通信领域内的基本理论和基本知识	①课堂教学:电路分析、信号与系统、模拟电路技术基础A、数字电路技术基础 A、通信电子线路 A、电磁场与电磁波、通信原理 A、信息论与编码 B、数字信号处理 B、语音信号处理、数字图像处理 B、统计信号分析与处理等 ②课外学习:参加通信协会开展电子设计竞赛等
2	掌握数据通信、移动通信、无线通信、光通信等通信技术	①课堂教学:计算机网络通信、光纤通信系统、现代交换原理、移动通信、多媒体通信等 ②课外学习:在合作企业产学研基地实习和培训等
3	掌握计算机的基本应用技术和软件开发技术	①课堂教学:C++语言程序设计、数据结构 B、计算机网络安全、移动互联网技术基础、LINUX 操作系统基础、ANDROID 系统开发等 ②课外学习:在“教育学历+技能认证”实习基地进行软件应用技能培训和实习等
4	熟悉各类通信系统及通信网的通信方式及系统体系结构,并了解有关的技术标准、规格、指标要求、通信协议等知识	①课堂教学:SDH 原理、通信资源管理系统基础、接入网技术、NGN、微波与天线、GPS 技术与应用等 ②课外学习:参加 H3C 等资格认证考试

序号	毕业要求	实现途径(教学过程)
5	初步具备通信系统及通信网系统设计、集成、调测、应用及其硬、软件设计与开发的能力	①课堂教学:单片机原理及应用 A、嵌入式系统、EDA 技术、FPGA 开发、模式识别 B 、MATLAB 应用基础、通信系统仿真与实践等 ②课外学习:参加 H3C 等资格认证考试及在产学研基地实习、培训等
6	了解通信领域最新进展与发展动态,掌握文献检索和资料查询方法,具有一定的创新能力	①课堂教学:物联网技术、现代通信新技术、电子信息学科导论、通识课(选修课)等 ②课外学习:参加院学术年会、发表主题报告等

主干学科:信息与通信系统。

核心课程:电路分析、信号与系统、模拟电路技术基础 A、数字电路技术基础 A、单片机原理及应用 A、通信原理 A、数字信号处理 B、移动通信、光纤通信系统、计算机网络通信、通信资源管理系统基础、通信电子线路 A、现代交换原理、接入网技术、EDA 技术、嵌入式系统。

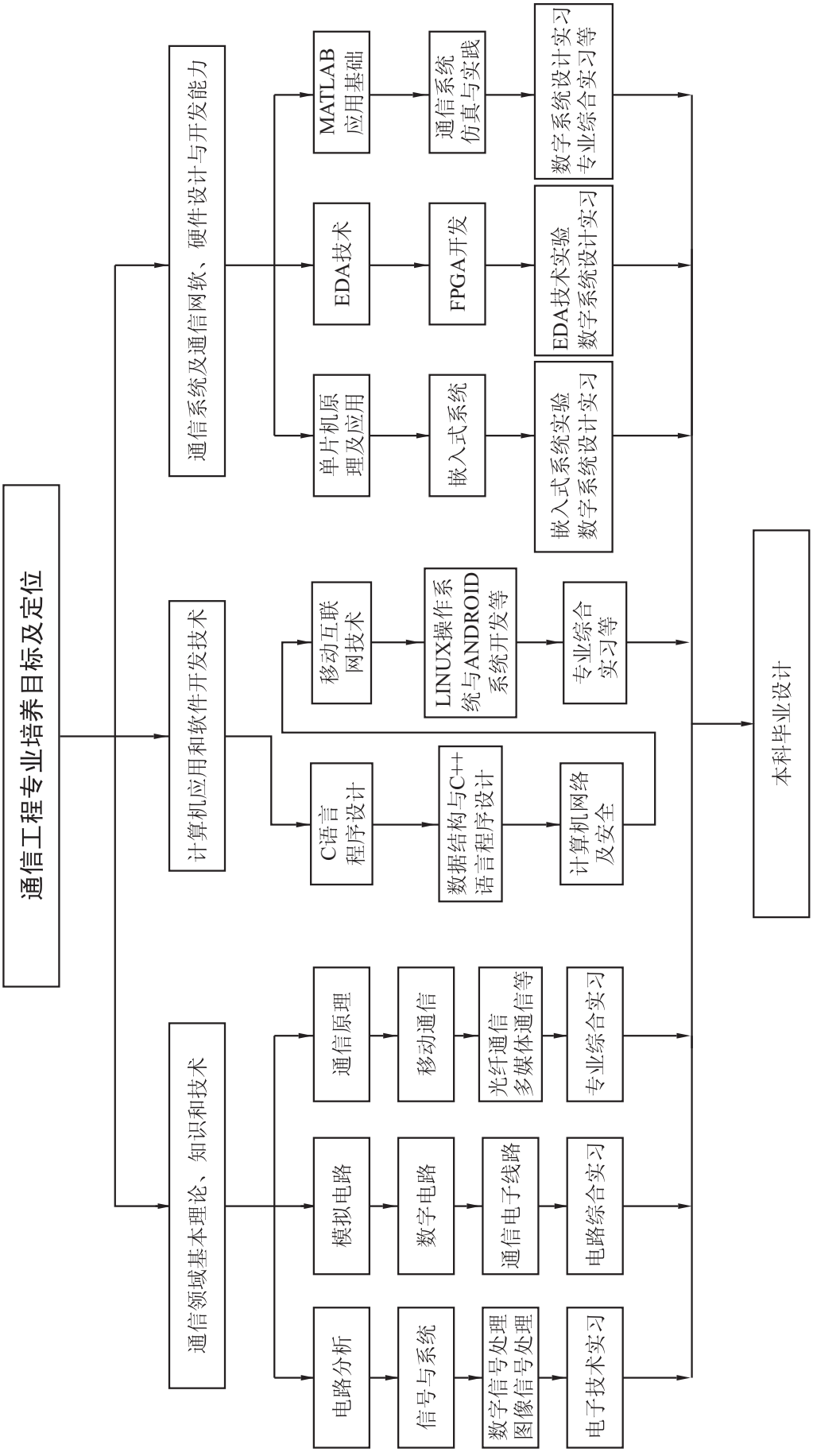
主要专业实验:模拟电路技术基础实验、数字电路技术基础实验、通信电子线路实验、通信原理实验、移动通信实验、光纤通信系统实验、EDA 技术实验、嵌入式系统实验。

主要实践教学环节:电子技术实习、电路综合实习、数字系统设计实习、专业综合实习、生产实习、毕业设计。

修业年限:四年。

授予学位:工学学士。

相近专业:电子信息工程。


通信工程专业培养目标及定位
通信领域基本理论、知识和技术
电路分析
信号与系统
数字信号处理
图像信号处理
电子技术实习
模拟电路
数字电路
通信电子线路
电路综合实习
通信原理
移动通信
光纤通信
多媒体通信等
专业综合实习
计算机应用和软件开发技术
C语言
程序设计
数据结构与C++
语言程序设计
计算机网络
及安全
移动互联
网技术
LINUX操作系
统与ANDROID
系统开发等
专业综合
实习等
通信系统及通信网软、硬件设计与开发能力
单片机原
理及应用
嵌入式系统
嵌入式系统实验
数字系统设计实习
EDA技术
FPGA开发
EDA技术实验
数字系统设计实习
MATLAB
应用基础
通信系统
仿真与实践
数字系统设计实习
专业综合实习等
本科毕业设计

Program for Communication Engineering

Specialty and Code: Communication Engineering 080703

Education Objective: It aims to foster students to cultivate fully-developed engineers in morality, intelligence, health and arts with good quality and innovative ability that master the knowledge and advanced skill of communication systems, communication networks and communication technology. After graduation, students can apply themselves to the communication field and correlative field as researchers, technical designers, manufacturers, businessmen and senior engineers who are creative and practical to develop and apply the communication technology and devices into all kinds of companies and national defense industry.

Graduation Requirements

1. Master the basic knowledge and basic theory of all kinds of communication technology in communication field.

2. Master the communication technology such as data communication, mobile communication, wireless communication, optical communication.

3. Master the skills of computer application and software development.

4. Be Familiar with all kinds of communication system, communication mode and system configuration. Master the correlative technology standard, communication protocol and specification.

5. Basically possess the capability of design, integration, testing and application of all kinds of communication system and communication network as well as design the hardware and software.

6. Understand the latest progress and development in the communication field, and master the basic method of index as well as possess the research and innovative capability.

Graduation Requirements and Ways to Achieve

No.	Graduation Requirements	Ways to Achieve(Teaching Process)
1	Master the basic knowledge and basic theory of all kinds of communication technology in communication field	①Classroom Teaching: Theory of Circuitry, Signal and System, Introductory Analog Electronics A, Digital Electronics A, Communication Electro Circuit A, Electromagnetic Waves, Communication Principle A, Information Theory and Coding B, Digital Signal Processing B, Speech Signal Processing, Digital Image Processing B, Statistical Signal Analysis and Processing ②Out-of-class Learning: Take part in communication association and developing electronic design contest
2	Master the communication technology such as data communication, mobile communication, wireless communication, optical communication	①Classroom Teaching: Computer Networks, Optical Fiber Communication Systems, Modern Switch Principle, Mobile Communication, Multimedia Communication ②Out-of-class Learning: Take part in the cooperation enterprise for practice and training, etc

No.	Graduation Requirements	Ways to Achieve(Teaching Process)
3	Master the skills of computer application and software development	①Classroom Teaching: C++ Language Program Design, Data Structure B, Computer Network Security, Basic Principle of Mobile Networks, LINUX Operating System, ANDROID System Design ②Out-of-class Learning: In the "Academic Certification+Skills Certification" practice base for software application skills training and practice
4	Be Familiar with all kinds of communication system, communication mode and system configuration. Master the correlative technology standard, communication protocol and specification	①Classroom Teaching: The Principle & Technology of SDH, Communication Resource Management System, Technologies of Access Network, NGN, Microwave Techniques and Antenna, GPS Technology Application and Development ②Out-of-class Learning: Take part in some qualification examinations and get certifications such as "H3C"
5	Basically possess the capability of design, integration, testing and application of all kinds of communication system and communication network as well as design the hardware and software	①Classroom Teaching: Single Chip Computer and Application A, the Embedded System, Electronic Design Automation, FPGA Design, Pattern Recognition B, MATLAB Application, Communication System Simulation and Practice ②Out-of-class Learning: Take part in some qualification examinations and get certifications such as "H3C" and take part in the cooperation enterprise for practice and training, etc
6	Understand the latest progress and development in the communication field, and master the basic method of index as well as possess the research and innovative capability	① Classroom Teaching: Technologies of Internet of Things, Modern Communication New Technology, Introduction to Electrical Information Science, Liberal Education Courses and Elective Courses ② Out-of-class Learning: Take part in academic annual meeting and issue topic report

Major Disciplines: Information and Communication System.

Main Courses: Theory of Circuitry, Introductory Analog Electronics A, Digital Electronics A, Signal and System, Single Chip Computer and Application A, Communication Principle A, Digital Signal Processing B, Mobile Communication, Optical Fiber Communication Systems, Computer Networks, Communication Electro circuit A, Communication Resource Management System, Modern Switch Principle, Technologies of Access Network, Electronic Design Automation, the Embedded System.

Lab Experiments: Introductory Analog Electronics Experiments, Digital Electronics Experiments, Communication Electro Circuit Experiments, Communication Principle Experiments, Mobile Communication Experiments, Optical Fiber Communication Systems Experiments, Electronic Design Automation Experiments, The Embedded System Experiments.

Practical Work: Electronic Technology Practice, Integrated Circuit Practice, Digital System Design Practice, Comprehensive Professional Training, Production Practice, Bachelor Thesis.

Duration: four years.

Degree Granted: Bachelor of Engineering.

Related Specialties: Electrical Information Engineering.

通信工程专业课程教学计划表

Course Descriptions of Communication Engineering

课程类别 Course Classification		课程编号 Course Code	课程名称 Course Name	学分 Crs	学时 Hrs	学时分类 Class Hours		先修课程 Prerequisite Courses	学期学分分配 Semester Credits							
						讲课 Lec.	实验 Lab.		一 1st	二 2nd	三 3rd	四 4th	五 5th	六 6th	七 7th	八 8th
通识教育课 Liberal Education Courses	必修 Compulsory	11706200	马克思主义基本原理 Principles of Marxism	3	48	48			3							
		11706500	毛泽东思想与中国特色社会主义理论体系概论 Introduction to Mao Tse-tung Thought and the Theoretical System of Socialism with Chinese Characteristics	4	64	64					4					
		11711800	中国近现代史纲要 The Essentials of Modern Chinese History	2	32	32				2						
		120002 * 0	思想道德修养与法律基础 Morality Education and Fundamentals of Law	3	48	48			1.5	1.5						
		113076 * 0	体育 Physical Education	4	144	144			1	1	1	1				
		109116 * 0	大学英语 College English	12	192	192			3	3	3	3				
		20724100	电子信息学科导论 Introduction to Electrical Information Science	1	16	16			1							
		14300100	军事理论 Military Theory	2	32	32			2							
	选修 Elective	总计 12 学分，含创新创业选修课学分，跨学科选修课不低于 6 学分。“形势与政策”课程作为限选课，由马克思主义学院实施		12	192											
		小计 **Sum**		**43**	**768**	**576**			**11.5**	**7.5**	**8**	**4**	**0**	**0**	**0**	**0**
学科基础课 Disciplinary Fundamental Courses		212127 * 1	高等数学 A Advanced Mathematics A	11.5	184	184			5	6.5						
		21212802	线性代数 B Linear Algebra B	2.5	40	40			2.5							
		21201902	复变函数与积分变换 B Function of Complex Variables and Integral Transformation B	2.5	40	40					2.5					

课程类别 Course Classification	课程编号 Course Code	课程名称 Course Name	学分 Crs	学时 Hrs	学时分类 Class Hours		先修课程 Prerequisite Courses	学期学分分配 Semester Credits							
					讲课 Lec.	实验 Lab.		一 1st	二 2nd	三 3rd	四 4th	五 5th	六 6th	七 7th	八 8th
学科基础课 Disciplinary Fundamental Courses	21202400	概率统计与随机过程 Probability Statistics and Stochastic Processes	3.5	56	56						3.5				
	212130*3	大学物理 C College Physics C	6	96	96		高等数学		3.5	2.5					
	212132*1	物理实验 A Physics Experiments A	3.5	56		56			2	1.5					
	20702700	电路分析 Theory of Circuitry	4.5	72	64	8	高等数学		4.5						
	20708801	模拟电路技术基础 A Introductory Analog Electronics A	4	64	54	10	电路分析			4					
	20710701	数字电路技术基础 A Digital Electronics A	4	64	50	14	模拟电路技术基础			4					
	21109700	信号与系统 Signal and System	3.5	56	56		电路分析				3.5				
	20701901	单片机原理及应用 A Single Chip Computer and Application A	3.5	56	46	10	数字电路技术基础				3.5				
	小计 **Sum**		**49**	**784**	**686**	**98**		**7.5**	**16.5**	**14.5**	**10.5**	**0**	**0**	**0**	**0**
专业主干课 Main Specialty Courses	219193*0	C/C++语言程序设计 C/C++ Language Programming	4.5	72	44	28		2.5		2					
	21908202	数据结构 B Data Structure B	2.5	40	32	8			2.5						
	20715800	电磁场与电磁波 Electromagnetic Waves	3	48	48						3				
	20715601	通信电子线路 A Communication Electro Circuit A	3	48	40	8					3				
	21100200	EDA 技术 Electronic Design Automation	2	32	16	16	数字电路技术基础				2				
	20711002	数字信号处理 B Digital Signal Processing B	3	48	36	12	信号与系统					3			
	21108401	通信原理 A Communication Principle A	4	64	52	12						4			
	21105700	计算机网络通信 Computer Networks	3	48	40	8						3			
	21106400	嵌入式系统 The Embedded System	2	32	24	8	单片机原理及应用					2			

课程类别 Course Classification	课程编号 Course Code	课程名称 Course Name	学分 Crs	学时 Hrs	学时分类 Class Hours		先修课程 Prerequisite Courses	学期学分分配 Semester Credits							
					讲课 Lec.	实验 Lab.		一 1st	二 2nd	三 3rd	四 4th	五 5th	六 6th	七 7th	八 8th
专业主干课 Main Specialty Courses	21909602	数字图像处理 B Digital Image Processing B	2	32	16	16	数字信号处理						2		
	20720600	光纤通信系统 Optical Fiber Communication Systems	3	48	40	8	通信原理						3		
	20730200	现代交换原理 Modern Switch Principle	3	48	36	12	计算机网络通信						3		
	20722000	移动通信 Mobile Communication	3	48	40	8	通信原理						3		
	20722100	SDH 原理 The Principle of SDH	3	48	40	8	通信原理						3		
	小计 **Sum**		**41**	**656**	**504**	**152**		**2.5**	**2.5**	**2**	**8**	**12**	**14**	**0**	**0**
专业选修课 Specialty Elective Courses		具体见专业选修课列表	10	160											
合计 **Sub-total**			**143**	**2368**	**1766**	**250**		**21.5**	**26.5**	**24.5**	**22.5**	**12**	**14**	**0**	**0**
实践环节 Practical Work	44300200	军事训练 Military Training	2	2 周				2							
	40729000	电子技术实习 Electronic Technology Practice	2	2 周						2					
	40729100	电路综合实习(通信) Integrated Circuit Practice (Communication)	4	4 周							4				
	40729200	数字系统设计实习 Digital System Design Practice	3	3 周								3			
	40729300	专业综合实习 Comprehensive Professional Training	4	4 周									4		
	40729400	生产实习 Production Practice	4	4 周										4	
	40729500	毕业设计 Bachelor Thesis	16	16 周											16
	小计 **Sum**		**35**	**35 周**				**2**	**0**	**2**	**4**	**3**	**4**	**4**	**16**

课程类别 Course Classification	课程编号 Course Code	课程名称 Course Name	学分 Crs	学时 Hrs	学时分类 Class Hours		先修课程 Prerequisite Courses	学期学分分配 Semester Credits							
					讲课 Lec.	实验 Lab.		一 1st	二 2nd	三 3rd	四 4th	五 5th	六 6th	七 7th	八 8th
Autonomous Learning 创新创业自主学习	ZZ35000S	社会调查 Social Investigation	2												
		其他(学科竞赛、发明创造、科研报告) Others (Contest, Invention, Innovation and Research Presentation)	3												
	小计 **Sum**		**5**												
总计 **Total**			**183**	**2368＋35 周**	**1766**	**250**		**24.5**	**26.5**	**26.5**	**26.5**	**15**	**18**	**4**	**16**
Specialty Elective Courses 可开出专业选修课列表	通信工程方向														
	20724400	移动互联网技术基础 Basic Principle of Mobile Networks	2	32		32		2							
	20725000	MATLAB 应用基础 MATLAB Application	1	16	8	8			1						
	21108600	通信资源管理系统基础 Communication Resource Management System	2	32	32		C＋＋程序设计					2			
	21108700	统计信号分析与处理 Statistical Signal Analysis and Processing	2	32	16	16	数字信号处理					2			
	21104300	多媒体通信 Multimedia Communication	2	32	16	16	通信原理					2			
	21915500	模式识别 B Pattern Recognition B	2	32	16	16						2			
	20730300	接入网技术 Technologies of Access Network	2	32	24	8							2		
	21100800	NGN Next Generation Networks	2	32	22	10							2		
	20730400	FPGA 开发 FPGA Design	2	32	16	16	EDA 技术						2		
	20730500	ANDROID 系统开发 ANDROID System Design	2	32	24	8	C＋＋程序设计						2		
	21915300	信息论与编码 B Information Theory and Coding B	2	32	28	4								2	
	20500100	GPS 技术与应用 GPS Technology Application And Development	1	16	16									1	

课程类别 Course Classification	课程编号 Course Code	课程名称 Course Name	学分 Crs	学时 Hrs	学时分类 Class Hours		先修课程 Prerequisite Courses	学期学分分配 Semester Credits							
					讲课 Lec.	实验 Lab.		一 1st	二 2nd	三 3rd	四 4th	五 5th	六 6th	七 7th	八 8th
可开出专业选修课列表 Specialty Elective Courses	21109500	现代通信新技术 Modern Communication New Technology	1	16	16									1	
	20730600	通信系统仿真与实践 Communication System Simulation and Practice	1	16	8	8	MATLAB 应用基础							1	
	20730700	LINUX 操作系统基础 LINUX Operating System	1.5	24	12	12								1.5	
	21905500	计算机网络安全 Computer Network Security	2	32	24	8	计算机网络通信							2	
	21111700	语音信号处理 Speech Signal Processing	2	32	24	8	数字信号处理							2	
	21915400	物联网技术概论 Technologies of Internet of Things	2	32	16	16	计算机网络通信							2	
	20711300	微波与天线 Microwave Techniques and Antenna	2	32	32		电磁场与电磁波					2			

注：通识教育选修课学分和创新创业自主学习学分未列入具体学期。

通信工程专业课程分类统计

Course Category Statistics of Communication Engineering

课程学分 / 统计	通识教育课 Liberal Education Courses		学科基础课 Disciplinary Fundamental Courses	专业主干课 Main Specialty Courses	专业选修课 Specialty Elective Courses	实践环节 Practical Work	创新创业自主学习 Autonomous Learning	学时总计 Total Hours	学分总计 Total Credits
	必修 Compulsory	选修 Selective							
学时/学分 Hrs/Crs	576/31	192/12	784/49	656/41	160/10	35 周/35	5	2368＋35 周	183
学分所占比例 Proportion of Credits	23.50%		26.78%	22.40	5.46%	19.13%	2.73%		100%