

物联网工程专业本科培养计划

Undergraduate Program for Internet of Things Engineering

一、培养目标

I . Educational Objectives

培养德、智、体全面发展，具有系统、扎实的信息学科理论基础，在物联网信息的获取、传输、处理及应用等方面，具有较宽广的专业知识和实践动手能力的研究型、复合型人才。毕业生具有良好的人文素质、创新精神和较强的英语能力，能在物联网技术产业、科研部门、高等院校及其相关领域从事研究、设计、开发及管理等方面的工作，并可继续攻读计算机科学与技术以及相关学科的硕士学位。

This program is designed to provide students all round development of morality, intelligence and physique, make them possess a systemic and solid theory foundation, and foster research-oriented, inter-disciplinary talents in the field of Internet of Things. After that, they will have good human qualities, innovative spirit and strong English ability. They can not only qualify for research, design, development and management in the technology industries of Internet of Things, research institutes, universities and other related fields, but also further pursue their advanced degrees in the Internet of Things engineering, the computer science and technology and other related subjects.

二、基本规格要求

II . Learning Outcomes

毕业生应获得以下几个方面的知识和能力：

1. 具有较扎实的数理基础；
2. 掌握信息学科的基本理论和方法；
3. 具有研究物联网领域理论问题和解决实际问题的能力；
4. 了解物联网学科的发展动态；
5. 具有较强的英语语言能力；
6. 掌握文献检索、资料查询的方法和撰写科学论文的能力；
7. 具有较好的人文素质以及较强的协调组织能力；
8. 具有较强的创新精神；
9. 具有较强的在未来生活和工作中继续学习的能力。

Students are expected to gain:

1. Sound grounding in both mathematics and physics;
2. Principles of information science;
3. Research and problem solving skills in the fields of Internet of Things ;
4. Skills to understand the development and trend in the fields of Internet of Things;
5. Skills to use English language;
6. Ability in document searching, data querying and thesis writing;
7. Attainment in humanities & art, cooperative and organizational skills;
8. Sense of creation and innovation.

三、培养特色

III. Program Highlights

以数理为基础，以信息学科为平台，以物联网工程为方向，培养具有良好科学素养，系统地掌握物联网基础理论、系统知识和基本技能，从事物联网领域的科学研究、系统分析、系统设计、技术开发、管理等方面的高级专门技术人才。

Based on math and science, built on information science, directed towards Internet of Things ,this program is committed to train students to become talented professionals with a sound theoretic foundation, systematical knowledge and skills, of the capability to carry out the scientific research, system analysis, system design, technical development, and management in the field of the Internet of Things.

四、主干学科

IV. Main Discipline

物联网工程 the Internet of Things Engineering

五、学制与学位

V. Program Length and Degree

学制：四年

Program Length: 4 years

授予学位：工学学士

Degrees Conferred : Bachelor of Engineering

六、学时与学分

VI. Credits Hours and Units

完成学业最低课内学分（含课程体系与集中性实践教学环节）要求：156.3 学分

Minimum Credits of Curricular(Comprising the course system and the intensive practical training) : 156.3 credits

完成学业最低课外学分要求：5 学分

Minimum Extracurricular Credits : 5 credits

1. 课程体系学时与学分

Course Credits Hours and Units

课程类别		课程性质	学时/学分	占课程体系学分比例（%）
素质教育通识课程		必修	512/28	39.4
		选修	160/10	7.0
学科大类基础课程		必修	1144/65.3	25.9
专业课	专业核心课	必修	272/13.5	10.9
	专业选修课	选修	384/24	16.8
合计			2472/140.8	100

Course Type		Required/Elective	Hrs/Crs	Percentage (%)
Essential-qualities-oriented Education General Courses		Required	512/28	39.4
		Elective	160/10	7.0
Basic Courses in General Discipline		Required	1144/65.3	25.9
Courses in Specialty	Common Core Courses	Required	272/13.5	10.9
	Specialty-Oriented Courses	Elective	384/24	16.8
Total			2472/140.8	100

2. 集中性实践教学环节周数与学分

Practicum Credits

实践教学环节名称	课程性质	周数/学分	占实践教学环节学分比例 (%)
军事训练	必修	2/1	6.45
电工实习	必修	2/1	6.45
生产实习 (社会实践)	必修	3/1.5	9.7
课程设计	必修	10/5	32.3
毕业设计 (论文)	必修	14/7	45.1
合计		31/15.5	100

Course Title	Required/Elective	Weeks/Credits	Percentage (%)
Military Training	Required	2/1	6.45
Electrical Engineering Practice	Required	2/1	6.45
Engineering Internship (Social Practice)	Required	3/1.5	9.7
Course Project	Required	10/5	32.3
Undergraduate Thesis	Required	14/7	45.1
Total		31/15.5	100

3. 课外学分

Extracurricular Credits

序号	课外活动名称	课外活动和社会实践的要求		课外学分
1	社会实践活动	提交社会调查报告, 通过答辩者		2
		个人被校团委或团省委评为社会实践活动积极分子者, 集体被校团委或团省委评为优秀社会实践队者		2
2	英语及计算机考试	全国大学英语六级考试	考试成绩达到学校要求者	2
		全国计算机等级考试	获二级以上证书者	2
		全国计算机软件资格、水平考试	获程序员证书者	2
			获高级程序员证书者	3
			获系统分析员证书者	4
3	竞赛	校级	获一等奖者	3
			获二等奖者	2
			获三等奖者	1
		省级	获一等奖者	4
			获二等奖者	3
			获三等奖者	2
		全国	获一等奖者	6
			获二等奖者	4
			获三等奖者	3
4	论文	在全国性刊物发表论文	每篇论文	2~3
5	科研	参与科研项目时间与科研能力	每项	1~3
6	实验	视创新情况	每项	1~3

注: 参加校体育运动会获第一名、第二名者与校级一等奖等同, 获第三名至第五名者与校级二等奖等同, 获第六至第八名者与校级三等奖等同。

华中科技大学 2016 级本科专业培养计划

No.	Extracurricular Activities and Social Practice	Requirements		Extracurricular Credits
1	Activities of Social Practice	Submit report and pass oral defense		2
		Entitled as Activist by the Communist Youth League of HUST or Hubei Province; Membership of the group which is entitled as Excellent Social Practice Group by the Communist Youth League of HUST or Hubei Province		2
2	Examinations in English and Computer	CET-6	Students whose Band-6 exam scores accord our requirements	2
		National Computer Rank Examination	Win certificate of Band-2 or higher	2
		National Computer Software Qualification	Win certificate of programmer	2
			Win certificate of Advanced Programmer	3
			Win certificate of System Analyst	4
3	Competitions	University Level	Win first prize	3
			Win second prize	2
			Win third prize	1
		Provincial Level	Win first prize	4
			Win second prize	3
			Win third prize	2
		National Level	Win first prize	6
			Win second prize	4
			Win third prize	3
4	Thesis	Those whose thesis appears in national publications	Per piece	2~3
5	Scientific Research	Depending on both the time spent in and ability demonstrated in scientific research project	Each item	1~3
6	Experiments	Depending on innovative extent	Each item	1~3

Note: In HUST Sports Meeting, the first and the second prize, the third to the fifth prize, and the sixth prize to the eighth prize are deemed respectively the first prize, the second prize and the third prize of university level.

七、主要课程

VII. Main Courses

C 语言程序设计 C Programming Language、 数据结构 Data Structure、 数字电路与逻辑设计 Digital Circuit and Logic Design、 计算机组织与结构 Computer Organization and Architecture、 嵌入式操作系统原理 Embedded Operating System、 数据库系统原理及应用 Database System Principle and Application、 计算机组织与结构 Computer Organization and Structure、 射频识别技术与应用 RFID Technology and Application 、 传感器原理及应用 Sensor Principle and Application、 物联网通信技术 Communication Technology of IOT、 物联网中间件 Middleware Technology of IOT、 物联网安全概论 Introduction to IOT Security。

八、主要实践教学环节（含专业实验）

VIII. Practicum Module (experiments Included)

C 语言课程设计 Course Project of C Programming Language、数据结构课程设计 Course Project of Data Structure、计算机硬件综合课程设计 Course Project of Hardware、嵌入式操作系统课程设计 Course Project in Operating System、射频识别技术与应用课程实验 RFID and Application Experiments、传感器技术原理及应用课程实验 Sensor principle and application Experiments、物联网应用系统综合设计 Project of Application system design of IOT、生产实习 Engineering Internship、毕业设计 Undergraduate Thesis 等。

九、教学进程计划表

IX. Course Schedule

院（系）：计算机科学与技术学院

专业：物联网工程

School (Department) : School of Computer Science & Technology

Specialty : Computer Science & Technology

课程类别 course type	课程性质 required/ elective	课程代码 course code	课程名称 course name	学时 hrs	学分 crs	其中 Including		设置学期 semester
						实验 exp.	上机 operation	
素质教育通识课程 Essential-qualities-oriented Education General Courses	必修 Required	0301901	思想道德修养与法律基础 Morals & Ethics & Fundamentals of Law	48	3			1
	必修 Required	0100721	中国近现代史纲要 Survey of Modern Chinese History	32	2			2
	必修 Required	0100732	马克思主义基本原理 Basic Theory of Marxism	48	3			3
	必修 Required	0100321	毛泽东思想和中国特色社会主义理论体系概论 General Introduction to Mao Zedong Thought and Socialist Theory with Chinese Characteristics	64	4			4
	必修 Required	0100741	形势与政策 Current Affairs and Policy	32	2			5-7
	必修 Required	0510071	中国语文 Chinese	32	2			1
	必修 Required	0508453	综合英语（一） Comprehensive English (I)	56	3.5			1
	必修 Required	0508463	综合英语（二） Comprehensive English (II)	56	3.5			2
	必修 Required	0400111	大学体育（一） Physical Education(I)	32	1			1
	必修 Required	0400121	大学体育（二） Physical Education(II)	32	1			2
	必修 Required	0400131	大学体育（三） Physical Education(III)	32	1			3
	必修 Required	0400141	大学体育（四） Physical Education(IV)	32	1			4
	选修 Elective	0800171	大学计算机基础 Fundamentals of computer technology	32	1		32	1
	必修 Required	1100011	军事理论 Military Theory	16	1			2

续表

课程类别 course type	课程性质 required/ elective	课程代码 course code	课程名称 course name	学时 hrs	学分 crs	其中 Including		设置学期 semester
						实验 exp.	上机 operation	
学科大类基础课程 Basic Courses in General Discipline			人文社科类选修课程 Electives in Humanities and Social Science	160	10			
	必修 Required	0700011	微积分（一）上 Calculus (I)	88	5.5			1
	必修 Required	0700012	微积分（一）下 Calculus (I)	88	5.5			2
	必修 Required	0700048	大学物理（一） Physics (I)	64	4			2
	必修 Required	0700049	大学物理（二） Physics (II)	64	4			3
	必修 Required	0706891	物理实验（一） Physical Experiments (I)	32	1	32		2
	必修 Required	0706901	物理实验（二） Physical Experiments (II)	24	0.8	24		3
	必修 Required	0700051	线性代数（一） Linear Algebra (I)	40	2.5			2
	必修 Required	0700063	概率论与数理统计（三） Probability and Mathematics Statistic (III)	40	2.5			3
	必修 Required	0700071	复变函数与积分变换 Complex Function and Integral Transform	40	2.5			3
	必修 Required	0810012	C 语言程序设计 Advanced Programming Language (C)	48	3			2
	必修 Required	0828231	C 语言程序设计实验 Advanced Programming Language Experiments	32	1		32	2
	必修 Required	0800115	电路理论（五） Circuit Theory (V)	64	4			3
	必修 Required	0800122	模拟电子技术（二） Analogue Electronics (II)	48	3			4
	必修 Required	0800771	数字电路与逻辑设计（一） Digital Circuit and Logic Design (I)	56	3.5			4
	必修 Required	0843351	数字电路与逻辑设计实验 Digital Circuit and Logic Design Experiments	16	0.5	16		4
	必修 Required	0810551	控制原理 Control Theory	48	3			5
	必修 Required	0700185	离散数学 Discrete Mathematics	48	3			2
	必修 Required	0800413	数据结构 Data Structure	48	3			3
	必修 Required	0800418	数据结构实验 Data Structure Experiments	32	1		32	3
	必修 Required	0801616	计算机组织与结构 Computer Organization and Architecture	56	3.5			5

续表

课程类别 course type	课程性质 required/ elective	课程代码 course code	课程名称 course name	学时 hrs	学分 crs	其中 Including		设置学期 semester
						实验 exp.	上机 operation	
Basic Courses in General Discipline 学科大类基础课程	必修 Required	0829311	计算机组织与结构实验 Computer Organization and Architecture Experiments	16	0.5	16		5
	必修 Required	0835722	嵌入式操作系统原理 Embedded Operating System	56	3.5			4
	必修 Required	0835723	嵌入式操作系统原理实验 Embedded Operating System Experiments	16	0.5	16		4
	必修 Required	0803303	数据库系统原理 Database System	48	3			4
	必修 Required	0803305	数据库系统原理实践 Database System Experiments	32	1		32	4
Common Courses in Specific 专业核心课程	必修 Required	0841992	射频识别技术与应用 RFID and Application	32	2			5
	必修 Required	0841993	射频识别技术与应用实验 RFID and Application Experiments	32	1	32		5
	必修 Required	0805853	传感器原理及应用 Sensor Principle and Application	32	2			6
	必修 Required	0805854	传感器原理及应用实验 Sensor Principle and Application Experiments	32	1	32		6
	必修 Required	0835714	物联网通信技术 Communication Technology of IOT	64	4			5
	必修 Required	0835715	物联网通信技术实验 Communication Technology Experiments of IOT	48	1.5	48		5
	必修 Required	0835863	物联网中间件技术 Middleware Technology of IOT	32	2			6
Specialty-oriented Courses 专业选修课程			A 组选修课(要求从本组选修不少于 6 学分)					
	选修 Elective	0835741	物联网安全概论 Introduction to IOT Security	32	2			6
	选修 Elective	0843051	物联网数据存储与管理 Data Storage and Managemeng of IOT	32	2			6
	选修 Elective	0835681	物联网技术导论 Introduction to Internet of Things	32	2			1
	选修 Elective	0843071	大数据分析与管理 Big data analysis and processing	24	1.5			7
			B 组选修课(除 A 组及计算机文化基础外的其它选修学分)					
	选修 Elective	0800442	信息技术导论 Introduction to Information Technology	16	1			1
	选修 Elective	0816913	Verilog 语言 Verilog language	32	1	32		4
	选修 Elective	0810661	嵌入式系统 Embedded System	32	2	24		6

续表

课程类别 course type	课程性质 required/ elective	课程代码 course code	课程名称 course name	学时 hrs	学分 crs	其中 Including		设置学期 semester
						实验 exp.	上机 operation	
专业选修课程 Specialty-oriented Courses Speciality	选 修 Elective	0803171	软件工程 Software Engineering	40	2.5			5
	选 修 Elective	0812312	C++ 程序设计 Advanced Programming Language (C++)	40	2.5			5
	必 修 Required	0835732	接口技术 Interface Techniques	48	3			6
	选 修 Elective	0835203	JAVA 语言程序设计 Advanced Programming Language (JAVA)	40	2.5			6
	选 修 Elective	0817072	数字图像处理 Digital Image Processing	24	1.5			7
	选 修 Elective	0833122	机器学习 Machine Learning	24	1.5			6
	选 修 Elective	0828251	基于平台的编程 Platform based programming	24	1.5			7
	选 修 Elective	0801621	人工智能 Artificial Intelligence	24	1.5			7
	选 修 Elective	0842272	社会网络与计算 Social networking and Computing	24	1.5			7
	选 修 Elective	0843751	移动终端软件开发 mobile phone development	24	1.5			7
	选 修 Elective	0842261	并行编程原理与实践 Parallel Programming Principle and Practice	32	2			6
实践环节 Internship and Practical Training	必 修 Required	1300013	军事训练 Military Training	2w	1			1
	必 修 Required	1304411	电工实习 Electrical Engineering Practice	2w	1			3
	必 修 Required	1300287	C 语言课程设计 Course Project of C Programming Language	1w	0.5			3
	必 修 Required	1300303	数据结构课程设计 Course Project of Data Structure	1w	0.5			4
	必 修 Required	1300403	硬件综合课程设计 Course Project of Hardware	2w	1			6
	必 修 Required	1302933	嵌入式操作系统课程设计 Course Project of Embeded System	2w	1			5
	必 修 Required	1302922	物联网应用系统综合设计 Course Project of IOT Application system	4w	2			7
	必 修 Required	130008a	生产实习 Engineering Intership	3w	1.5			7
	必 修 Required	130004f	毕业设计 Undergraduate Thesis	14w	7			8