

光电信息科学与工程专业本科培养计划

Undergraduate Program for Specialty In Optoelectronic Information Science and Engineering

一、培养目标

I. Program Objectives

培养德、智、体全面发展，具有系统、扎实的光电理论基础，在信息的获取、传递、处理及应用等方面具有较宽广的专业知识，英语应用能力和工程实践动手能力强，人文素质和创新精神优秀，并在激光科学与工程、光纤通信系统与技术、光电系统与信息处理、光电子集成器件技术等方向具有一定专长的高素质人才。毕业生能在研究院所、高等院校、信息产业部门及其相关领域从事信息科学与技术的研究、系统集成与设计、开发等方面的工作。

Aiming at preparing all-rounded, high-quality talents with international competence, this program will enable students to be solid grounded in basic theory, wide-ranged in specialized knowledge, capable of practical work and particularly specialized in Laser Science and Engineering, Optical Fiber Communication System and Technology, Optoelectronic System and Information Processing, Optoelectronic Integrated Devices. Students can be fit into jobs in IT department research centers and colleges. They can do research, design and develop the integrated system in Information Science and Technology area.

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. 扎实的数理基础；
2. 掌握光学与光电子学、电子与信息科学的基本理论和方法；
3. 解决本学科领域内的科研及工程问题的能力；
4. 了解本学科发展的前沿动态；
5. 较强的英语语言能力；
6. 优秀的文献检索、资料查询与综述，以及科技论文和研究报告撰写的能力；
7. 较好的人文社科知识和人文素质，以及较强的协调、组织能力；
8. 较强的创新精神。

As students of this program, you will gain:

1. Solid grounding in maths and physics;
2. Basic theories and methods of Optics, Optoelectronics, Electronics and Information Science;
3. The competency in solving the problems in specialty of scientific research and engineering;
4. Knowledge of the development of the discipline;
5. Mastery of English;
6. Basic methods of literature survey, reviewing and scientific thesis writing ability;
7. Solid grounding in humanities and arts and ability of managing and organizing;
8. Innovative thinking.

三、培养特色

III. Program Highlights

注重拓宽学科基础，坚持理工交叉，突出专业特色，重视科学实践，适应市场导向，发展学生个性。坚持将学科资源转化为优质教学资源的理念，设置“光电创新实践”及选拔优秀学生进入科研团队参加科研等科学实践等环节。设置四组学科特色鲜明、市场需求旺盛的专业方向选修课和多达三十余门的专业任选课，供学生选修。

The main guiding ideology is broadening the subject groundings, aiming at inter-discipline development in Science and Engineering, featuring in specialty competence, stressing on scientific practice, meeting the market requirements, and developing the initiatives of the students as well. The specialties transform the disciplinary resources into superior educational resources, and introduce the innovative scientific methods in the optoelectronic practices course, and recommend the excellent students to scientific research teams to do scientific practice. The specialties share four groups of limited electives, which are discipline-featured and the market required. There are more than 30 technical electives in specialty to meet the students' needs.

四、主干学科

IV. Main Discipline

光学工程

Optical Engineering

五、学制与学位

V. Program Length and Degree

学制：四年

Duration: 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：157 学分。

Minimum Credits of Curricular(Comprising course system and intensified internship practical training) : 157 credits

其中，专业基础课程、专业核心课程学分不允许用其他课程学分进行学分冲抵和替代。

Major-related basic courses and core courses cannot be covered using credits from other courses in the program

完成学业最低课外学分要求：3 学分。

Minimum Extracurricular Credits : 3 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 (%)
通识教育基础课程		必修	1032/59	41.1
		选修	160/10	7.0
学科(专业)基础课程	学科大类基础课程	必修	552/31	21.6
	学科专业基础课程	必修	472/27	18.8

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课程类别		课程性质	学时/学分	占课程体系学分比例(%)
专业课程	专业核心课程	必修	96/6	4.2
	专业方向课程	必修	40/2.5	1.7
		选修	128/8	5.6
合计			2480/143.5	100

Course Type		Required /Elective	Hrs/Crs	Percentage (%)	
General Education Core Curriculum		Required	1032/59	41.1	
		Elective	160/10	7.0	
Discipline-related Courses	General	Required	552/31	21.6	
	Basic Subdisciplinary	Required	472/27	18.8	
Major-specific Courses	Common Core Courses		Required	96/6	4.2
	Specialty-Oriented Courses	Required	40/2.5	1.7	
		Elective	128/8	5.6	
Total			2480/143.5	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	7.4
电工实习	必修	2/1	7.4
生产实习(社会实践)	必修	3/1.5	11.1
课程设计	必修	4/2	14.8
专业认知实验	必修	1/0.5	3.7
科研训练	必修	3/1.5	11.1
毕业设计(论文)	必修	16/6	44.5
合计		31/13.5	100

Course Title	Required /Elective	Weeks/Credits	Percentage (%)
Military Training	Required	2/1	7.4
Electrical Engineering Practice	Required	2/1	7.4
Engineering Internship (Social Practice)	Required	3/1.5	11.1
Course Project	Required	4/2	14.8
Cognition Practice	Required	1/0.5	3.7
Scientific Research Training	Required	3/1.5	11.1
Undergraduate Thesis	Required	16/6	44.5
Total		31/13.5	100

3. 课外学分

Extracurricular Credits

序号	名称	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	1	
		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	获六级证书者	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			

续表

序号	名称	要求	课外学分	
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	视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：各院（系）应视具体情况，自行制定本院（系）课外活动和社会实践内容、形式及要求；院（系）在制定课外活动学时分，应参照课内学分和全校性课外活动要求记载学分；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。

No.	Activities	Requirements	Extracurricular Credits	
1	Community Engagement	Submitting a report and passing the oral defense	1	
		Individuals awarded "Active Participant" / Teams awarded "Excellent Performance" by HUST or Hubei Youth League Committee	2	
2	Qualifications	CET-6	Win certificate of Band-6 or higher	2
		National Computer Rank Examination	Certificate (Grade 1 / 2)	2
		Qualifications for Computer and Software Technology Proficiency	Programmer	2
			Senior Programmer	3
System Analyst	4			
3	Competitions	University Level	First Prize	3
			Second Prize	2
			Third Prize	1
		Provincial Level	First Prize	4
			Second Prize	3
			Third Prize	2
		National Level	First Prize	6
			Second Prize	4
			Third Prize	3
4	Academic Papers	Published in national-level journals	Each paper	2-3
5	Research Programs	Contribution and research capability	Each program	1-3
6	Experiments	Innovation capacity	Each experiment	1-3

七、主要课程

VII. Main Courses

信号与线性系统 Signal and Linear System、电路理论 Circuit Theory、模拟电子技术 Analogue Electronics、数字电路与逻辑设计 Digital Circuit and Logic Design、单片机原理及应用 Principle and Application of Microcontroller、量子力学 Quantum Mechanics、应用光学 Applied Optics、电动力学 Electrodynamics、物理光学 Physics Optics、激光原理与技术 Laser Theory and Technology、光电探测与信号处理 Optoelectronic Detect & Signal Processing、光纤光学 Fiber Optics、固体物理 Solid State Physics

八、主要实践教学环节（含专业实验）

VIII. Practicum Module (experiments included)

课程设计 Course Project：光学课程设计 Optical Design Course Project、专业方向课程设计 Course Project in Specialty Track.

集中实践教学环节：Intensified Internship and Practical Training: 电工实习 Electrical Engineering Practice、生产实习 Engineering Internship、科研训练 Scientific Research Training、毕业设计 Undergraduate Thesis

专业实验 Specialized Experiments：应用光学实验 Applied Optics Experiments、物理光学实验 Physical Optics Experiments、激光实验 Experiments of Laser、光纤技术实验 Experiments of Optical Fiber Technology、光电技术实验 Experiments of Optoelectronic Technology、光电创新实践 Optoelectronics Innovative Practice

九、教学进程计划表

IX. Course Schedule

院（系）：光学与电子信息学院

专业：光电信息科学与工程

School (Department): School of Optical and Electronic Information

Specialty: Optoelectronic Information Science and Engineering

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
						课外 extra-cur.	实验 exp.	上机 operation	
通识教育基础课程 General Education Core Curriculum	必修 Required	0301902	思想道德修养与法律基础 Morals & Ethics & Fundamentals of Law	40	2.5	8			1
	必修 Required	0100721	中国近现代史纲要 Survey of Modern Chinese History	32	2	8			2
	必修 Required	0100733	思政课社会实践 Social Practice of Ideological and Political Theories Course	24	1.5	20			2
	必修 Required	0100932	马克思主义原理 Theory of Marxism	40	2.5	8			3
	必修 Required	0100322	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	56	3.5				4
	必修 Required	0100741	形式与政策 Situation and Policy	32	2	14			1-6
	必修 Required	0510071	中国语文 Chinese	32	2	10			1

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
						课外 extra-cur.	实验 exp.	上机 operation	
通识教育基础课程 General Education Core Curriculum	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
	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 (II)	88	5.5				2
	必修 Required	0700051	线性代数 Linear Algebra	40	2.5				1
	必修 Required	0700063	概率论与数理统计（三） Probability and Mathematics Statistics (III)	40	2.5				2
	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	0700081	数理方程与特殊函数（一） Equations of Mathematical Physics & Special Functions (I)	40	2.5				3
	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	1		24		3
	必修 Required	1100011	军事理论 Military Theory	16	1				1
			人文社科类选修课程 Electives in Humanities and Social Science	160	10				1-8
	必修 Required	0801663	工程制图（一） Engineering Graphics (I)	40	2.5				1
	必修 Required	0800441	信息技术导论 Introduction to Information Technology	32	2	4			1
必修 Required	0810011	C 语言程序设计 Advanced Programming Language C	56	3.5			20	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
						课外 extra-cur.	实验 exp.	上机 operation	
学科大类基础课程 Discipline-related General Courses	必修 Required	0800113	电路理论（三） Circuit Theory (III)	88	5.5				3
	必修 Required	0800155	信号与线性系统 Signal and Linear System	56	3.5			4	3
	必修 Required	0803051	电路测试实验 Circuit Measurement Experiment	32	1		32		4
	必修 Required	0800773	数字电路与逻辑设计（一） Digital Circuit and Logic Design (I)	56	3.5				4
	必修 Required	0800124	模拟电子技术（二） Analog Electronics (II)	56	3.5				4
	必修 Required	0815811	电子线路设计实验（一） Electronic Circuitry Design and Experiments (I)	32	1		32		4
	必修 Required	0815821	电子线路设计实验（二） Electronic Circuitry Design and Experiments (II)	32	1		32		5
	必修 Required	0808463	单片机原理及应用 Principle and Application of Single Chip Microcomputer	56	3.5				5
	必修 Required	0804662	微机实验 Microcomputer Experiments	16	0.5		16		5
学科专业基础课程 Basic Subdisciplinary Courses	必修 Required	0806831	应用光学 Applied Optics	48	3				3
	必修 Required	0804545	应用光学实验 Applied Optics Experiments	16	0.5		16		3
	必修 Required	0812341	电动力学 Electrodynamics	48	3				4
	必修 Required	0806821	物理光学 Physics Optics	72	4.5				4
	必修 Required	0804546	物理光学实验 Physical Optics Experiments	24	1		24		4
	必修 Required	0800372	量子力学 Quantum Mechanics	48	3				4
	必修 Required	0804592	光电探测与信号处理 Optoelectronic Detect & Signal Processing	48	3				5
	必修 Required	0804604	光电技术实验 Experiments of Optoelectronic Technology	16	0.5		16		5
	必修 Required	0804201	激光原理与技术 Laser Theory and Technology	64	4				5
	必修 Required	0808703	激光实验 Experiments of Laser	24	1		24		5
	必修 Required	0804562	光纤光学 Fiber Optics	40	2.5				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
						课外 extra-cur.	实验 exp.	上机 operation	
	必修 Required	0804587	光纤技术实验 Experiments of Optical Fiber Technology	24	1		24		6
Major-specific Core Courses 专业核心课程			课程组 1 (光电子器件,专业方向 A 或 B)						
	限选 Limited	0800695	热力学与统计物理 Thermodynamics and Statistical Physics	32	2				5
	限选 Limited	0700143	固体物理 Solid State Physics	48	3				6
			课程组 2 (光电系统, 专业方向 C 或 D)						
	限选 Limited	0800434	通信原理 Communication Theory	48	3				5
	限选 Limited	0804161	光纤通信技术 Optical Fiber Communication Technology	48	3				6
Major-specific Electives 专业方向课程			专业方向 A (激光科学与工程) Limited Electives in Track A: Laser Science & Engineering						
	限选 Limited	0829211	激光器件与系统 Laser Devices and systems	40	2.5				6
	选修 Elective		专业任选课 Technical Electives in Specialty	128	8				6-7
			专业方向 B (光电子器件与集成) Limited Electives in Track B : Optoelectronic Devices and Integration						
	限选 Limited	0804635	半导体光电子学 Optoelectronics in Semiconductor	40	2.5				6
	选修 Elective		专业任选课 Technical Electives in Specialty	128	8				6-7
			专业方向 C (光通信与光网络技术) Limited Electives in Track C: Optical Communication & Optical Network Technology						
	限选 Limited	0832661	光网络技术 Optical Network Technology	40	2.5				6
	选修 Elective		专业任选课 Technical Electives in Specialty	128	8				6-7
			专业方向 D (光电系统与信息处理) Limited Electives in Track D : Optoelectronic System & Information Processing						
	限选 Limited	0832711	光电仪器学 Optoelectronic Instruments	40	2.5				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
						课外 extra-cur.	实验 exp.	上机 operation	
专业方向课程 Major-specific Electives	选修 Elective		专业任选课 Technical Electives in Specialty	128	8				6-7
			专业任选课 Technical Electives in Specialty						
	选修 Elective	0832621	激光工程实验 Experiments of Laser Engineering	16	0.5		16		7
	选修 Elective	0832651	集成光电子实验 Integrated Optoelectronic Experiments	16	0.5		16		7
	选修 Elective	0832701	光纤通信技术实验 Experiments on Optical Fiber Communication Technology	16	0.5		16		7
	选修 Elective	0827023	光电信息技术实验 Experiments of Optoelectronic Information Technology	16	0.5		16		7
	选修 Elective	0810653	微电子器件与 IC 设计 Microelectronic Device and IC Design	40	2.5				6
	选修 Elective	0821801	信息光电器件 Information Optoelectronic Devices	32	2				7
	选修 Elective	0821811	能源光电器件 Optoelectronic Devices in Energy	48	3				7
	选修 Elective	0702322	现代化学基础 Principle of Modern Chemistry (I)	48	3				7
	选修 Elective	0821851	半导体薄膜材料 Semiconductor Thin Films	40	2.5				7
	选修 Elective	0812821	新型激光器件及应用 Novel Laser Devices & Applications	32	2				7
	选修 Elective	0832731	激光电源与控制技术 Laser Power Supply & Control Technology	32	2				7
	选修 Elective	0832741	激光应用系统设计 Design of Laser Application System	32	2				7
	选修 Elective	0832751	激光生物工程 Laser Biomedicine Engineering	32	2				7
	选修 Elective	0800141	计算机网络 Computer Network	32	2				6
	选修 Elective	0810552	控制原理 Theory of Control	40	2.5				7
	选修 Elective	0804691	数据通信 Data Communication	40	2.5				7
	选修 Elective	0832761	光传输网络节点技术 The Node Technology of Optical Transmitting Network	32	2				7
	选修 Elective	0832771	光互联技术 Optical Interconnection Technology	32	2				7

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
						课外 extra-cur.	实验 exp.	上机 operation	
专业方向课程 Major-specific Electives	选修 Elective	0817112	光同步数字传输网技术 Technology of synchronous digital hierarchy	32	2				7
	选修 Elective	0702332	生物医学光子学基础 Fundamentals of Biophotonics	32	2				7
	选修 Elective	0804701	精密机械设计与 CADFine Mechanics Design & CAD	40	2.5				7
	选修 Elective	0835352	现代光学实验 Modern Optical Experiment	24	1		24		7
	选修 Elective	0818962	光纤传感技术 Optical Fiber Sensing Technology	32	2				7
	选修 Elective	0832821	光集成器件 Optical Integrated devices	32	2				7
	选修 Elective	0832841	光电创新实践 Optoelectronics Innovative Practice	32	2				7
	选修 Elective	0832301	平板显示技术 Flat Panel Display Technology	24	1.5				7
实践环节 Practical training items	必修 Required	1300012	军事训练 Military Training	2W	1				1
	必修 Required	1327002	光学课程设计 Optical Design Course Project	2W	1				3
	必修 Required	1300032	电工实习 Electrical Engineering Practice	2W	1				4
	必修 Required	1300083	生产实习 Engineering Internship	3W	1.5				6
	必修 Required	130010a	专业认知实验 Experiments for specialty cognition	1W	0.5				1
	限选 Limited		专业方向课程设计 (A、B、C、D 四选一) Course Project in Tracks(A, B, C or D)	2W	1				6
	必修 Required	130044d	科研训练 Scientific Research Training	3W	1.5				7
	必修 Required	130004i	毕业设计(论文) Undergraduate Thesis	16W	6				8