

2024级080900电子科学与技术硕士生培养方案

所属学院	信息工程学院			学位类别	学术学位		学制	3
最低总学分	28	学位课	15	非学位课	10	必修环节	3	

培养目标 为适应我国国民经济发展和社会主义建设的需要，本学科培养德智体美全面发展，具备基础理论与应用能力强的高级人才，本学科培养的硕士研究生应满足以下要求：

1. 具有电子科学与技术宽广坚实的理论和系统专门的知识，了解国内外物理电子学、电子信息材料与元器件、电路与系统、电磁场与微波技术、半导体物理与器件、集成电路等某一领域新技术和发展动向，数学、物理基础扎实，掌握电子、通信、信息科学专业的基础理论与技术，掌握计算机、控制科学的一般理论与技术；
2. 具有从事科学研究、教学工作或独立担负本专业技术工作能力，能结合与本学科有关的实际问题进行创新的研究；
3. 熟练掌握一门外国语，具有较好的听、说、读、写能力以及国际视野；
4. 思维严谨，逻辑严密，具有发现问题、提出问题和解决问题的能力，书面和口头表达能力好。

英文：In order to meet the needs of China's national economic development and socialist construction, it is necessary to cultivate high-level professionals in the field of electronic science and technology who possesses basic theory and application ability as well as be well-developed morally, intellectually, physically, aesthetically and physically. Master students trained in this major should meet the following specific requirements:

1. Has a broad solid specialized knowledge in electronic science and technology, and well understand the new technology and development trend in physical electronics, electronic materials and components, circuit and system, electromagnetic field and microwave technology, semiconductor physics and devices, integrated circuit, etc. Master electronic science, communication science, the basic theory of information science and technology. Master the general theory and technology in computer science, control science;
2. Have the ability to engage in scientific research, teaching or independently undertake the technical work of the specialty, and can carry out innovative research in combination with practical problems related to the discipline;

	<p>3. Proficient in a foreign language, good at listening, speaking, reading and writing, as well as international vision and competitiveness;</p> <p>4. Rigorous thinking, logical, have the basic ability to find, propose and solve problems, good written and oral expression ability.</p>
<p>学科/类别简介及研究方向</p>	<p>电子科学与技术是新理论、新技术和新应用结合最为紧密、最为活跃的学科方向之一，是电子信息产业快速发展的基石。它综合了半导体器件及应用、集成电路设计与制造、信号处理技术以及计算机应用等学科领域的最新研究成果。电子科学与技术推动了传统产业的升级换代，在社会经济发展中占据重要地位，并引领着信息技术产业的发展方向。本学科包括以下四个研究方向：</p> <p>1. 物理电子学</p> <p>主要研究光电子学、微波电子学和纳米电子学。培养研究生在电子器件设计、制造、封装、测试和评价等方面的专门知识，掌握系统理论，并具有实践经验。</p> <p>2. 微电子学及固体电子学</p> <p>主要研究半导体物理与器件物理，半导体材料与器件，半导体光电器件及其集成技术，集成电路和系统集成芯片的制造、设计、测试和封装技术。培养研究生在半导体器件设计、制造、测试和封装方面的专门知识。</p> <p>3. 电路与系统</p> <p>主要研究电路分析与网络综合方法；可重构可编程电路设计理论与方法；非线性动力学与混沌理论；电子线路分析、设计、制造与测试技术；信号完整性分析；语音和图像信号感知与处理技术；集成电路与系统CAD及设计自动化技术；功率电子学等。培养研究生在电路分析、设计、制造与测试等方面的专门知识。</p> <p>4. 电磁场与微波技术</p> <p>主要研究微波、毫米波及光波器件、电路与系统的理论、分析、仿真、设计，等。培养研究生在微波、毫米波及光波器件设计、仿真、制造与测试等方面的综合能力。</p> <p>英文：Electronic science and technology is one of the subject directions that combine new theory, new technology and new application most closely and is the footstone of rapid development of electronic information technology industry. It integrates the latest research results of semiconductor devices and applications, integrated circuit design and manufacturing, signal processing technology and computer applications. Electronic science and technology promoted the upgrading of traditional industries, occupies an important position in social and economic development, and leads the development direction of information technology industry. The</p>

	<p>discipline includes the following four research directions:</p> <p>1. Physical Electronics</p> <p>Major research fields: optoelectronics, microwave electronics and nanoelectronics. To cultivate graduate students' specialized knowledge in electronic device design, manufacturing, packaging, testing and evaluation, master system theory, and have practical experience.</p> <p>2. Microelectronics and Solid-State Electronics</p> <p>Microelectronics and solid-state electronics research: semiconductor physics and device physics, semiconductor materials and devices, semiconductor optoelectronic devices and their integration technology, integrated circuit and system integrated chip manufacturing, design, testing and packaging technology. To develop graduate students' expertise in semiconductor device design, manufacturing, testing and packaging.</p> <p>3. Circuits and Systems</p> <p>Circuit and system research: circuit analysis and network synthesis method; Reconfigurable programmable circuit design theory and method; Nonlinear dynamics and chaos theory; Electronic circuit analysis, design, manufacturing and testing technology; Signal integrity analysis; Speech and image signal sensing and processing technology; Integrated circuit and system CAD and design automation technology; Power electronics, etc. To develop graduate students' expertise in circuit analysis, design, manufacturing and testing.</p> <p>4. Electromagnetic Field and Microwave Technology</p> <p>Electromagnetic field and microwave technology: theory, analysis, simulation and design of microwave, millimeter wave and optical wave devices, circuits and systems. To train graduate students' comprehensive abilities in microwave, millimeter wave and optical wave device design, simulation, manufacturing and testing.</p>
<p>培养方式及学习年限</p>	<p>1. 培养方式</p> <p>本学科硕士研究生培养实行导师负责制，采用导师个别指导或导师组集体培养相结合、课程学习和论文研究工作相结合的方式。</p> <p>2. 学习年限</p> <p>(1) 本学科硕士研究生的学制为3年，原则上，全日制硕士研究生最长学习年限为4年，非全日制硕士研究生最长学习年限为5年。</p>

	<p>(2) 研究生提前完成培养计划中规定的课程学习和学位论文工作，论文答辩通过，达到申请学位要求者，可申请提前毕业。硕士研究生（学制为3年）最多提前半年毕业。提前毕业的硕士研究生须满足以下条件之一：</p> <p>(1) 发表SCI二区及以上期刊论文1篇，或发表SCI三区及以上期刊论文2篇；同时授权发明专利1件。</p> <p>(2) 发表SCI期刊论文1篇，同时获省部级一等奖及以上科技奖励1项（限前10名）。</p> <p>英文：1. Cultivation mode</p> <p>The cultivation of master's students in this discipline is based on the tutor system, which combines individual guidance by tutors or collective training by tutor groups, and combination of course study and thesis research work.</p> <p>2. Period of schooling</p> <p>(1) The academic term for master's degree students in discipline is 3 years. In principle, the longest period of schooling for a full-time master's degree student is 4 years, and for a part-time master's degree student is 5 years.</p> <p>(2) Graduate students who have completed the courses and dissertation work stipulated in the training plan in advance, passed the thesis defense, and met the requirements of applying for a degree can apply for early graduation. Master's students (three years of study) can graduate at most six months in advance. The graduation in advance must meet one of the following conditions:</p> <p>(1) Published one SCI journal paper at least in Rank 1 or above level, or two SCI journal papers in Rank 3 or above level; At the same time, one invention patent was authorized.</p> <p>(2) Published 1 SCI journal paper, while won first prize of the science and technology awards of provincial level and above level (the top 10 limited).</p>
<p>课程学习及学分要求</p>	<p>1. 课程学习</p> <p>研究生课程由学位课、非学位课、补修课三部分组成，原则上在两个学期内完成。</p> <p>(1) 学位课</p> <p>学位课包括公共必修课和专业基础课。公共必修课为政治理论和英语；专业基础课为本学科范围内的通识基础理论。所有学位课为考试课，考核方式为课堂笔试（含闭卷、开卷），成绩由考试、平时作业、考勤等综合评定。</p> <p>(2) 非学位课</p> <p>非学位课包含公共选修课、专业选修课，旨在培养特定研究方向所需的专门知识或能力，拓宽知识面，支撑学科交叉研究等。所有非学位课为考查课，考核方式可以选择考试也可以选择考查，其形式可以是课堂</p>

笔试、口试、提交课程论文或报告（含总结、综述、心得体会等）。

(3) 补修课

跨学科、跨专业或大专起点研究生，应补修本专业2-3门本科生主干课程。补修课程由导师确定，并应在培养计划中列出。补修课程通过自学或跟随本科生听课的方式进行，需考核并记录成绩，但不计入研究生课程学分。

2. 学分要求

(1) 总学分不少于28学分。其中，课程总学分不少于25学分，科研素质培养环节（必修环节）应修满3学分。

(2) 课程中学位课不少于15学分，非学位课不少于10学分。

(3) 学位课中，公共必修课应修满9学分，专业基础课不少于6学分。

(4) 非学位课中，专业选修课不少于9学分，课程可结合研究方向和指导教师的意见进行选择。

(5) 学位课考试方式为考试，成绩合格（ ≥ 60 分）可获得学分，平均成绩75分（含）以上。非学位课考试方式为考试或考查。

英文：1. Course setting

Postgraduate courses are composed of degree courses, non-degree courses and supplementary courses, which should be completed within two semesters in principle.

(1) Degree courses

Degree courses include public compulsory courses and professional basic courses. Public compulsory courses are political theory and English; Professional basic course is the basic theory of general knowledge within the scope of this discipline. All degree courses are examination courses, and the assessment method is written examination in class (including closed book and open book), and the results are comprehensively evaluated by examination, homework and attendance.

(2) Non-degree courses

Non-degree courses include public elective courses and professional elective courses, aiming at cultivating specialized knowledge or ability required by specific research direction, broadening the scope of knowledge and supporting interdisciplinary research. All non-degree courses are examination courses, and the assessment method can be either examination or examination, which can take the form of classroom written examination, oral examination, and the submission of course papers or reports (including summary, summary, experience, etc.).

(3) Supplementary courses

	<p>Interdisciplinary, interdisciplinary or junior college graduate students should take 2-3 main undergraduate courses. Remedial courses are determined by the instructor and should be listed in the training plan. Remedial courses are taught by self-study or by attending lectures with undergraduates, and the results are assessed and recorded, but they are not included in the credits of graduate courses.</p> <p>2. Credit requirements</p> <p>(1) The total credits shall not be less than 28 credits. Among them, the total course credits shall be no less than 25 credits, and the scientific research quality training link (compulsory link) shall be completed with 3 credits.</p> <p>(2) No less than 15 credits of degree courses and 10 credits of non-degree courses.</p> <p>(3) In degree courses, students should complete 9 credits of public compulsory courses and no less than 6 credits of professional basic courses.</p> <p>(4) For non-degree courses, students should complete no less than 9 credits of public and professional elective courses. The elective courses can be selected according to the research direction and the opinions of the instructors.</p> <p>(5) The assessment method of degree courses is examination, and it can obtain credits with passing score (≥ 60 points), and the average score is 75 points or more. The assessment method of non-degree courses is examination or test.</p>
<p>素质 培养</p>	<p>科学素质培养为必修环节，包括开题报告、中期检查、学术活动。</p> <p>1. 开题报告。应在第3学期完成选题工作。硕士研究生以PPT的形式将考核内容向考核小组进行不少于15分钟的汇报，开题报告的评定成绩低于70分，视为未通过。考核通过，获得1学分。</p> <p>2. 中期检查。应在第5学期完成中期检查。硕士研究生以PPT的形式将考核内容向考核小组进行10-20分钟的汇报，开题报告的评定成绩低于70分，视为未通过。考核通过，获得1学分。</p> <p>3. 学术活动。硕士生在申请论文答辩前应参加校级（地厅级）以上单位或本学科学术团体组织的学术报告会不少于3次。完成获得1学分。</p> <p>英文：The scientific quality training is a compulsory part, including opening report, mid-term inspection and academic activities.</p> <p>1. Opening report. The topic selection should be completed in the 3rd semester. Master students will report the assessment contents to the assessment team in the form of PPT for no less than</p>

	<p>15 minutes. The assessment score of the opening report is less than 70 points, it will be regarded as failure. The students will get 1 credit once passed the examination.</p> <p>2. Mid-term inspection. The mid-term examination should be completed in the 5th semester. The master' s students will report the examination content to the examination team for 10-20 minutes in the form of PPT. The assessment score of the opening report is less than 70 points, it will be regarded as failure. The students will get 1 credit once passed the examination.</p> <p>3. Academic activities. Before applying for the dissertation defense, master students should attend 3 academic lectures at least organized by the university-level (district-level) and above units or academic groups of the discipline. The students will get 1 credit once completed the activities.</p>
<p>学位论文</p>	<p>硕士学位论文论文工作应在导师指导下独立完成，论文对所研究的内容应有新见解，并力求在理论上或实际应用上对我国社会主义建设具有一定的理论意义或应用价值</p> <p>1. 论文类型与形式</p> <p>硕士学位论文字数一般不少于3万字。论文文字重复比检查须满足学校相关规定。</p> <p>2. 论文评阅</p> <p>按论文评阅实行盲审制，硕士学位论文须有2名校外研究生导师担任评阅人。两位评阅人均不同意答辩时，不能答辩；有一位评阅人不同意答辩时，一般不能答辩。</p> <p>3. 学位论文答辩</p> <p>论文答辩委员会采取不记名投票方式，就是否通过学位论文和授予硕士学位作出决议。决议经全体成员三分之二（含）以上同意，方可通过。</p> <p>英文:The dissertation work should be completed independently under the guidance of the supervisor. The dissertation should have new insights into the content under study and strive to have certain theoretical significance or application value for the construction of socialism in China in terms of theory or practical application.</p> <p>1. Type and Form of Dissertation</p> <p>The word count of master' s thesis should be at least 30,000 words. The dissertation text repetition ratio check must meet the relevant regulations of the university.</p> <p>2. Paper Review</p> <p>The dissertation review system is blind, and there must be two reviewers from outside the</p>

	<p>university for the master' s thesis. If two reviewers disagree with the defense, the thesis cannot be defended; if one reviewer disagrees with the defense, the thesis cannot be defended in general.</p> <p>3. Dissertation defense</p> <p>The dissertation defense committee adopts the method of secret ballot to make a resolution on whether to pass the dissertation and award the master' s degree. The resolution shall be passed with the consent of two-thirds of all members (inclusive).</p>
<p>学位 申请 与授 予</p>	<p>1. 硕士研究生在学位申请时，需要提供其攻读硕士学位期间的学术成果。申请学位须满足下列条件之一： (1) 发表（含录用）与学位论文内容相关的中文核心及以上期刊论文1篇（或被录用，须提供录用证明），或发表SCI、EI、CPCI收录的国际会议论文1篇。 (2) 发表中文CN及以上期刊论文1篇；同时参与导师主持的省部级及以上科研项目1项并提交结项报告（限前5名），或获省部级及以上科技奖励1项。</p> <p>2. 硕士研究生在学校规定学习年限内，按培养方案规定修完培养计划规定内容，成绩合格，完成学位论文并通过答辩，准予毕业。经学校学位评定委员会审议通过，准予授予相应硕士学位。</p> <p>英文：1. Master' s degree students are required to provide their academic achievements published in their degree application during their master' s degree studies. Academic achievements must meet at least the following condition: (1) Publish (or be accepted) at least one Chinese core journal related to the content of the dissertation(or be accepted, proof of acceptance must be provided), or publish one international conference paper cited in SCI, EI, CPCI. (2) Published one Chinese CN journal paper and above level, At the same time, participating in one scientific research project of provincial and ministerial level and above level in the charge of the supervisor and submit a concluding report (the top 5 limited), or won one prize of the science and technology awards of provincial level and above level.</p> <p>2. The master' s degree students are allowed to graduate after completing the contents of the cultivation plan according to the cultivation program, passing the grades, completing the dissertation and passing the defense within the study period stipulated by the university. The master' s degree will be awarded after the university' s Academic Degree Assessment Committee deliberates and approves.</p>
<p>备注</p>	

平台课程

课程类别	课程编号	课程名称	学时	学分	开课学年	开课学期	开课单位	课程英文名称
学位课	M02A00015	学术道德与论文写作	16	1	2024-2025	第一学期	材料科学与工程学院	Academic Ethics and Thesis Writing
学位课	M14A00002	中国特色社会主义理论与实践研究	32	2	2024-2025	第二学期	马克思主义学院	Study on the Theory and Practice of Party Building
学位课	M14A00003	自然辩证法概论	16	1	2024-2025	第二学期	马克思主义学院	An Introduction to Dialectics of Nature
学位课	M14A00020	习近平新时代中国特色社会主义思想概论	16	1	2024-2025	第二学期	马克思主义学院	Introduction to Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era
学位课	M15A00005	研究生英语阅读	32	2	2024-2025	第一学期	外国语学院	English Reading for Postgraduates
学位课	M15A00006	翻译与写作	32	2	2024-2025	第二学期	外国语学院	English Translation and Writing for Postgraduates
学位课	M06B08011	现代半导体器件物理	32	2	2024-2025	第一学期	信息工程学院	Modern Semiconductor Device and Physics
学位课	M06B08012	集成电路设计与EDA	32	2	2024-2025	第二学期	信息工程学院	Integrated Circuits Design and EDA
学位课	M10A00009	计算方法	32	2	2024-2025	第一学期	数学与统计学院	computational method
非学位课	M14A00025	四史教育	16	1	2024-2025	第二学期	马克思主义学院	The learning of the histories of the Party, New China, the reform and opening-up, and socialist development

默认领域方向课程

课程类别	课程编号	课程名称	学时	学分	开课学年	开课学期	开课单位	课程英文名称
非学位课	M06B08013	数字集成电路设计	32	2	2024-2025	第二学期	信息工程学院	Design of digital integrated circuit
非学位课	M06C08007	深度学习及其应用	32	2	2024-2025	第二学期	信息工程学院	Deep Learning and its applications
非学位课	M06C08011	电子科学与技术学科前	16	1	2024-2025	第一学期	信息工程学院	Leading-edge of Electronics Science and

沿							Technology	
非学位课	M06C08012	电子科技英语	16	1	2024-2025	第一学期	信息工程学院	Special
非学位课	M06C08013	现代数字信号处理	32	2	2024-2025	第一学期	信息工程学院	Modern Digital Signal Processing
非学位课	M06C08015	高等电磁理论	32	2	2024-2025	第一学期	信息工程学院	Advanced Electromagnetic Theory
非学位课	M06C08016	电子功能材料与元器件	32	2	2024-2025	第二学期	信息工程学院	Electronic Functional Materials and Devices
非学位课	M06C08017	半导体光电子学	32	2	2024-2025	第二学期	信息工程学院	Semiconductor Optic Electronics
非学位课	M06C08020	计算机仿真技术	32	2	2024-2025	第二学期	信息工程学院	Computer Simulation Technology
非学位课	M10A00011	数理统计	32	2	2024-2025	第一学期	数学与统计学院	Mathematical Statistics
必修环节	M05D00002	中期检查	0	1	2024-2025	第一学期	信息工程学院	Mid-term Inspection
必修环节	M05D00003	学术活动	0	1	2024-2025	第一学期	信息工程学院	Academic Activities
必修环节	M05D00001	开题报告	0	1	2024-2025	第一学期	信息工程学院	Opening Report