硕士培养计划 Master Program （2022）

一、学制及学习年限

全日制硕士专业学位的学制为3年，学位申请的最长年限（含休学和保留学籍）为5年。经学校批准和保留学籍的学生，复学后最短学习年限须相应延长。

The normal study system is 3 years, while the maximum duration (including suspension and retainment) is 5 years. The shortest duration of studies should be extended accordingly when the doctoral students who have been approved by the university to suspend or reinstate their studies.

在满足培养方案要求的基础上，允许硕士生申请提前毕业，允许提前毕业的具体条件如下：

On the basis of meeting the requirements of the cultivation plan, master students are allowed to apply for early graduation. The specific conditions for early graduation are as follows:

1. 提前毕业的最长提前时间不超过0.5年；

The longest advance time for early graduation is no more than half a year.

1. 修课学分不低于**25**学分，其中学位课程学分不低于**20**学分；

The credits for taking courses shall not be less than 25 credits, of which the credits for degree courses shall not be less than 20 credits

1. 完成必修环节且获得相应学分；

Complete the required processes and get corresponding credits

1. 在《中国计算机学会推荐国际学术会议和期刊目录》中所列的A类学术会议或期刊上发表学术论文1篇及以上（要求研究生为第一作者），且获得授权发明专利或软件著作权一项（要求研究生排名第一，或导师排名第一且研究生排名第二）。《中国计算机学会推荐国际学术会议和期刊目录》以中国计算机学会学术工作委员会于硕士生入学或申请提前毕业的年度公布的目录为准；

Publish one or more academic papers in Class A academic conferences or journals listed in the Catalogue of International Academic Conferences and Journals Recommended by CCF (graduate students are required to be the first authors), and obtain an authorized invention patent or software copyright (graduate students are required to rank first, or tutors rank first and graduate students rank second). The Catalogue of International Academic Conferences and Journals Recommended by china computer federation shall be subject to the catalogue published by china computer federation Academic Working Committee in the year when master students enter school or apply for early graduation;

1. 中文能力应当至少达到《国际汉语能力标准三级》水平。

Student must pass HSK 3 or higher in terms of Chinese level.

1. 导师同意并推荐，成果由学院学术委员会认定。

The tutor agrees and recommends, and the results are recognized by the academic committee of the college.

1. 课程设置与学分要求

硕士生修课总学分不低于**25**学分，其中学位课程学分不低于**20**学分.

The total credits of doctoral courses get by students should be no less than 25, including no less than 20 credits for degree courses.

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| **课程**  **类别**  Course Category | | **课程编号**  Course Numbers | **课程名称**  Courses | **学时**  Teaching hours | **学分**  **Credits** | **考核方式**  Assessment methods | **开课学期**  Semester | **授课/组织单位**  Lecturing Departments | **备注**  **Memo** |
| 学位课  Degree Courses  (≥20) | 公共必修课  Public compulsory course  (=4) | yl202295001 | 汉语  Chinese | 32 | 2 | 考试  Exam | 1 | 国际教育学院  School of International Education |  |
| yl202295002 | 中国概况  Introduction to China | 32 | 2 | 考试Exam | 2 | 国际教育学院  School of International Education |  |
| 领域核心课  Discipline core course(≥16) | yx202202001 | 应用数理统计  Mathematical Statistics and Application | 48 | 3 | 考试Exam | 1 | 理学院  College of Science |  |
| yz202209360 | 论文写作指导  Guidance of Academic Writing | 16 | 1 | 考试Exam | 1 | 软件学院  Software College | 必选  Compulsory |
| yz202209361 | 高级人工智能  Advanced Artificial Intelligence | 32 | 2 | 考试Exam | 1 | 软件学院  Software College |  |
| yz202209362 | 高级软件工程  Advanced Software Engineering | 32 | 2 | 考试Exam | 1 | 软件学院  Software College |  |
| yz202209363 | 高级算法设计与分析  Advanced Algorithm Design and Analysis | 32 | 2 | 考试Exam | 1 | 软件学院  Software College |  |
| yz202209364 | 面向对象的系统分析与设计  Object-Oriented System Analysis and Design | 32 | 2 | 考试Exam | 1 | 软件学院  Software College |  |
| yz202209365 | CMMI过程模型与敏捷实践  CMMI Software Process Model and Improvement and Agile Practice | 32 | 2 | 考试Exam | 1 | 软件学院  Software College |  |
| yz202209369 | 分析型数据仓库系统  Analytical Data Warehouse System | 32 | 2 | 考试Exam | 2 | 软件学院  Software College |  |
| 领域选修课  Discipline elective course(≥5) | yz202209366 | 创新创业活动  Innovation and entrepreneurship activities | 16 | 1 | 考查Test | 2 | 软件学院  Software College | Memo1 |
| yz202209367 | 网络科学基本方法  Basic Methods of Network Science | 32 | 2 | 考查Test | 2 | 软件学院  Software College |  |
| yz202209368 | 现代信息检索理论与方法  Theory and Method of Modern Information Retrieval | 32 | 2 | 考查Test | 2 | 软件学院  Software College |  |
| yz202209370 | 用户体验与交互设计  Design on User Experience and Human-Computer Interaction | 32 | 2 | 考查Test | 2 | 软件学院  Software College |  |
| yz202209371 | 学术研究方法与规范  Academic research methods and norms | 16 | 1 | 考查Test | 2 | 软件学院  Software College | 必选Compulsory |

备注1：“创新创业活动”为工程硕士研究生必选课程，该课程1学分（16学时）。通过课堂教学、系列讲座、经验交流、创新创业竞赛等形式完成，具体折算学时由学院规定。

Memo 1：Innovation and entrepreneurship activities is compulsory course with 1 credit ( 16 teaching hours), earn by learning courses, seminars, experience exchange, innovation competitions, etc.

三、必修环节与学分要求III. Compulsory courses and credit requirements

科学精神与文化素养教育、学术活动、专业实践是硕士专业学位研究生应完成的必修环节，研究生须获得相应学分。

Scientific literacy and humanistic quality education, practical activities and academic activities are compulsory for master students, and they must complete corresponding credits. The basic requirements are as following:

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| **必修环节**  **Session** | **对应课程编号**  **Course No** | **对应课程名称**  **Course Name** | **学分**  **Credit** | **考核方式**  **Assessment method** | **开课学期**  **Semester** | **授课/组织单位**  **Organizer** | **备注**  **Memo** |
| 学术活动  Academic Activity | yh202209002 | 学术报告与讲座  Academic Reports and Lectures | 1 | 授课及考核方式见备注1  See Memo 1 | 1-6学期  Semester 1 to 6 | 软件学院  Software College | 必修环节学分不计入课程学分  Credits are not included in course credits |
| 专业实践  Practice | yh202209004 | 实践训练Practical traning | 8 | 授课及考核方式见备注2  See Memo 2 | 3-5学期  Semester 3 to 5 |
| 科学精神与文化素养教育Scientific Spirit and Cultural Accomplishment Education | yh202209001 | 课外活动  Extracurricular activities | 1 | 授课及考核方式见备注3  See Memo 3 | 1-6学期  Semester 1 to 6 |

备注1：“学术活动”环节通过“学术报告与讲座”的形式实现。该课程1学分，要求在申请答辩前完成。学术活动折算学时标准：听取学院组织或认可的专题学术报告：4学时/次；参加国际学术会议并做学术报告：16学时/次；国内学术会议上做学术报告：8学时/次。研究生按要求填写表格，导师签字，主管院长审核，要求本课程至少获得16学时。

Memo 1: "Academic activities" is realized in the form of "academic reports and lectures". This course is 1 credit, which is required to be completed before applying for defense. Standard for converting academic activities into hours: listening to special academic reports organized or recognized by the college: 4 hours/time; Attend international academic conferences and give academic reports: 16 hours/time; Give academic reports at domestic academic conferences: 8 hours/time. Graduate students fill in the form as required, sign by the tutor and review by the dean in charge, and require the course to get at least 16 hours.

备注2：“专业实践”环节通过“实践训练”的形式实现。该课程8学分。学院对硕士生专业实践进行全过程的管理，以确保实践教学质量，具体要求如下：

"Professional practice" is realized in the form of "practical training". This course has 8 credits. The college manages the whole process of master's professional practice to ensure the quality of practical teaching. The specific requirements are as follows:

专业实践由学院统一组织，于第3学期开展。在实践结束后由学院组织验收，并收取《全日制硕士专业学位研究生专业实践计划表》、专业实践报告。

It will be organized by the college and given in the 3rd semester. After the professional practice, it will be marked by the college through defence. Practical assessment table and practical report will be submitted after the training.

备注3：“科学精神与文化素养教育”主要包括科学道德、体育与艺术素养、劳动等方面内容，通过“课外活动”形式体现。该课程1学分，要求在申请答辩前完成。课外活动折算学时标准：参加学院组织或认可的课外学生活动：4学时/次。研究生按要求填写表格，辅导员签字，主管院长审核，要求本课程至少获得16学时。

"Scientific spirit and cultural literacy education" mainly includes scientific ethics, sports and artistic literacy, labor and other aspects, which are embodied in the form of "extracurricular activities". This course is 1 credit, which is required to be completed before applying for defense. Extracurricular activities converted into hours standard: Participate in extracurricular student activities organized or recognized by the college: 4 hours/time. Graduate students fill in the form as required, sign it by the counselor, and review it by the dean in charge, requiring the course to get at least 16 hours.

四、学位论文工作

**（一）文献综述**Literature review

硕士生在第一学期由导师确认研究方向，并围绕研究方向，查阅国内外相关文献不少于15篇，其中外文文献至少10篇。并撰写一份文献综述报告，字数不少于2000字。文献综述报告应在第三学期的9月底（提前毕业硕士生为第二学期的5月底）前完成，并由导师组织考核。

In the first semester, the supervisor confirms the research direction of master students, and around the research direction, consult no less than 15 related literatures at home and abroad, including at least 10 foreign literatures. And write a literature review report with no less than 2000 words. The literature review report should be completed before the end of September of the third semester (the end of May of the second semester for master students who graduate ahead of schedule), and the tutor should organize the assessment.

**（二）开题** Research proposal

学位论文选题应来源于应用课题或现实问题，必须要有明确的职业背景和应用价值，可以是一个完整的工程设计项目、软件开发项目或技术攻关研究专题。论文选题应有一定的技术难度、先进性和工作量，能体现作者综合运用科学理论、方法和技术手段解决工程实际问题的能力。开题报告以文献综述报告为基础，内容包括课题来源、主要参考文献、课题的国内外研究概况及发展趋势、课题研究的目的和意义、课题的技术路线和实施方案、论文工作计划安排、预期效果等。

The topic selection of thesis should come from application topics or practical problems, must have clear professional background and application value, and can be a complete engineering design project, software development project or technical research topic. The topic selection of the thesis should have certain technical difficulty, advancement and workload, which can reflect the author's ability to comprehensively use scientific theories, methods and technical means to solve practical engineering problems. Research proposal is based on the literature review report, including the source of the subject, the main references, the research situation and development trend at home and abroad, the purpose and significance of the subject research, the technical route and implementation scheme of the subject, the work plan of the paper, the expected effect, etc.

研究生开题由学院统一组织并集中安排，3年学制的研究生必须在第4学期开学2个月内完成开题，其他学制硕士研究生可根据具体情况适当提前。开题以学术报告方式进行，由3-5名本专业学位类别或相关类别的教授或副教授组成的小组进行讨论和评审。论文选题必须符合本专业学位类别的内涵要。论文选题更改较大者，应重新开题。

Students' Research proposal are organized and arranged centrally by the college. Postgraduates with 3-year academic system must complete it within 2 months after the start of the fourth semester. The topic is in the form of an academic report, which is discussed and evaluated by a group composed of 3-5 professors or associate professors. The topic selection of the thesis must conform to the connotation of the professional degree category. If the topic selection of the thesis has changed greatly, it should be resubmitted.

**（三）中期考核 Interim report**

中期检查内容包括课程学习（含专业实践）、文献综述、开题报告的完成情况及学术研究成果、学位论文研究进展等情况。重点检查已完成的研究内容和取得的成效、是否按照开题报告的内容和进度进行、存在的问题、下阶段要完成的研究内容及其具体工作计划等。

The interim report includes course study (including professional practice), literature review, completion of proposal, academic research results, research progress of thesis, etc. Focus on checking the completed research contents and achievements, whether they are carried out according to the contents and progress of the proposal, the existing problems, the research contents to be completed in the next stage and their specific work plans, etc.

研究生的中期考核由学院统一组织并集中安排，3年制硕士研究生的中期考核须在第5学期结束前完成（提前毕业硕士生为第四学期结束前完成)。中期总结报告以学术报告方式进行，由3-5名本专业学位类别或相关类别的教授或副教授组成的小组进行讨论和评审，并根据考核结果给出学分。

The interim report assessment is organized and arranged by the college, and it must be completed before the end of the fifth semester (graduates who graduate early are completed before the end of the fourth semester). The interim report is conducted in the form of academic report, which is discussed and reviewed by a group composed of 3-5 professors or associate professors.

**（四）成果要求**

科研训练是硕士生培养的重要环节，硕士生在毕业前须至少完成以下4种学术研究成果的任意1项：

Scientific research training is an important link in the training of master students. Before graduation, master students must complete at least one of the following four academic research results:

1. 研发成果。独立开展或作为主要成员参与实际应用课题研发，取得学院验收认定的研发成果（需提供研发成果验收单或应用证明），并获得软件著作权；

Research and development achievements. Independently carry out or participate in the research and development of practical application projects as a major member, obtain the research and development results recognized by the college (need to provide the acceptance form or application certificate of research and development results), and obtain software copyright;

1. 学术论文。至少发表一篇与学位论文相关的学术论文，要求研究生为第一作者，或导师（副导师）第一作者且研究生为第二作者，且论文被SCI/EI检索。已录用且能提供录用通知的论文可作为申请答辩认定的成果（其中，需缴纳版面费或发表费的，还需提供缴费证明）；

Academic papers. Publish at least one academic paper related to thesis, requiring the graduate student to be the first author, or the tutor (assistant tutor) to be the first author and the graduate student to be the second author, and the paper to be retrieved by SCI/EI. Papers that have been admitted and can provide notices can be used as the results of applying for defense recognition (among them, if you need to pay fees or publishing fees, you need to provide payment record);

1. 发明专利。公示或授权发明专利一项，要求研究生排名第一，或软件学院教师排名第一、研究生排名第二，且专利与学位论文内容相关；

Invention patent. Publicize or authorize an invention patent, requiring graduate students to rank first, or teachers of software colleges to rank first, graduate students to rank second, and patents are related to the content of dissertations;

1. 经学院认可的其他学术或研发成果1项。

1 other academic or research and development achievement recognized by the college.

以上学术研究成果须在导师指导下完成，并符合选题方向。研究生满足提前毕业条件的成果，与满足本学术研究成果要求的成果不能重复使用。

The above academic research results must be completed under the guidance of the tutor and conform to the topic selection direction. The results of graduate students meeting the conditions for early graduation and the results meeting the requirements of this academic research cannot be reused.

1. **汉语水平要求 Chinese Proficiency Requirements**

中文能力应当至少达到《国际汉语能力标准三级》水平。

Chinese proficiency should at least pass HSK 3.

**（六）学位论文撰写 Thesis**

学位论文须在导师指导下独立完成，体现作者综合运用科学理论、方法和技术手段解决实际问题的能力，具有先进性、实用性，取得了较好的成效。学位论文应满足本学科学位授予标准。学位论文撰写要求按《东北大学研究生学位论文撰写标准》执行。

Thesis must be completed independently under the guidance of tutors, which reflects the author's ability to comprehensively use scientific theories, methods and technical means to solve practical problems. They are advanced and practical, and have achieved good results. Thesis should meet the degree-granting standards of this discipline. The requirements for writing dissertations shall be implemented according to the Standards for Writing Postgraduate Dissertations of Northeastern University.

学位论文可将应用基础研究、规划设计、产品开发、案例分析等为主要内容，以论文形式表现。

The dissertation can take applied basic research, planning and design, product development, case analysis, etc. as the main contents and express in the form of thesis.

**（六）论文预答辩 Pre-defence**

硕士专业学位论文预答辩工作由学院统一安排，论文预答辩以学术报告形式进行，由3-5名软件工程专业（领域）或相关类别（领域）的教授或副教授组成的小组进行论证和评审。论文预答辩未通过的研究生不能申请送审学位论文。

The pre-defense is arranged by the college, and it is conducted in the form of academic reports, which are demonstrated and reviewed by a group composed of 3-5 professors or associate professors of software engineering majors (fields) or related categories (fields). Postgraduates who fail to pass the pre-defense cannot apply for graduation.

**（七）论文评审 Thesis Review**

硕士专业学位研究生完成规定的课程学分、必修环节学分，文献综述、开题报告、中期检查、成果要求、论文预答辩等环节考核合格，经学院审查通过后，可申请进入学位论文评审程序。

学位论文评审工作由学院负责组织。学位论文须由2名软件工程专业类别（领域）或相关领域的具有高级专业技术职务的专家评审，其中校内专家1人，企业（行业）或实际部门专家1人，研究生导师不能作为学位论文正式评审人。

Postgraduates with master's degree can apply to thesis review after completing the required course credits, compulsory link credits, literature review, proposal, interim, achievement requirements, and pre-defense.

Thesis review is organized by the college. Thesis must be reviewed by two experts with senior professional and technical positions in software engineering professional categories (fields) or related fields, including one internal expert, one enterprise (industry) or actual department expert, and postgraduate tutors cannot be the formal reviewers of dissertations.

**（八）论文答辩 Defence**

专业学位论文答辩时间距提交开题报告时间不低于12个月。研究生完成并通过文献综述、开题报告、中期检查等培养方案规定的所有环节，课程（含专业实践）成绩合格，达到培养方案规定的学分要求，方可申请参加学位论文答辩。学位论文答辩工作由学院统一组织并集中安排。答辩委员会应按相应专业教育指导委员会的要求组成。指导教师不能作为论文答辩委员会成员。学位论文答辩工作按照《东北大学授予研究生学位的工作细则》进行。

The time for defending professional dissertations is not less than 12 months from the time for submitting the proposal. Postgraduates can apply for defense only after completing and passing all the sessions stipulated in the training program, such as literature review, proposal and interim report, and passing the course (including professional practice) scores and meeting the credit requirements stipulated in the training program. The defense is organized and arranged by the college. The defense committee shall be composed according to the requirements of the corresponding professional education steering committee. Instructors cannot be members of the thesis defense committee. The defense is carried out in accordance with Regulations for Granting Postgraduate Degree in Northeastern University.

研究生在学校规定的年限内，修完培养方案规定内容，成绩合格，完成学位论文并通过学位论文答辩的，准予毕业，学校发给毕业证书。经学院学位评定分委员会审核、校学位评定委员会审定通过后，授予相应学位，发给相应学位证书。

Graduate students who have completed the contents stipulated in the training plan, passed the grades, completed the thesis and passed the thesis defense within the time limit stipulated by the school are allowed to graduate, and the school will issue a graduation certificate. After being examined by the Academic Degree Evaluation Sub-Committee of the College and approved by the Academic Degree Evaluation Committee of the School, the corresponding degree will be awarded and the corresponding degree certificate will be issued.