

西安交通大学

XI'AN JIAOTONG UNIVERSITY

Graduate Program
for International Students



Graduate School

2019.07

前沿科学技术研究院

Frontier Institute of Science and Technology



前沿科学技术研究院

Frontier Institute of Science and Technology

材料及物理类、生物类国际研究生培养方案

International Graduate Programs in Materials and Physics Fields/ Biomedical Field

(一) 材料及物理类博士研究生培养方案 (适用于多学科材料研究中心、材料物理中心、微观组织科学中心的博士研究生, 或根据导师要求使用)

Doctoral programs in materials and physics fields are applicable for doctoral students in Multi-disciplinary Materials Research Center (MMRC), Materials Physics Center (MPC), and the Center for Microstructure Science (CMS), etc.

一、培养目标 (Program objectives)

培养适应国民经济发展和社会主义建设需要的、具有国际视野的创新型人才, 提高研究生的自主学习能力和创新实践能力, 具体要达到以下要求:

The programs aim to cultivate innovative talents that have international vision, serve the needs of economic development and construction, and to improve their independent learning ability and innovative practice ability. The following are specific requirements:

1. 热爱祖国, 遵纪守法, 道德品质好, 愿为科研事业奉献、服务。

Students should love their motherland, obey laws, have good moral qualities, and engage in scientific research.

2. 在材料物理领域掌握坚实宽广的基础理论和系统深入的专门知识; 在所从事的研究方向上做出创造性成果。

Students are expected to know solid knowledge, broad basic theories and have systematic in-depth specialized knowledge in the field of materials physics, and obtain innovative results in the research area undertaken.

3. 具有独立从事科学研究工作的能力; 具有实事求是, 科学严谨的治学态度和工作作风。

Students have the ability to work independently in scientific research and have a down-to-earth work style and rigorous academic attitude.

4. 能够熟练地阅读本领域的外文资料, 并具有一定的听说和写作。

Students are proficient in reading literature in materials physics in a foreign language and are able to listen and speak in that foreign language.

二、研究方向 (Research fields)

1. 记忆材料、压电材料、磁致伸缩材料等各种智能材料及其物理、化学、力学性能研究; 致力



于能够带来超高性能或全新性能的普遍性新原理的发现以及由此设计和开发高性能新型智能材料。

Research on intelligent materials, such as shape memory polymer, piezoelectric ceramics, magnetostrictive metals and their physical, chemical, and mechanical properties; discovering general new mechanism that can lead to ultra-high and new performance of materials, from which new intelligent materials can be designed and developed.

2. 先进结构材料与铁性功能材料相变过程微观组织演化、高温和应力作用下微观组织与位错的交互作用，力-电和电-磁耦合多铁材料，集成计算材料科学与工程。

Understanding the interaction between microstructure and dislocation during phase transformation of structural and ferrous functional materials; studying the relationship between microstructure and dislocation under high temperature and stress; studying the force-electric and electric-magnetic coupling of multi-ferric materials.

3. 计算材料学以及纳米材料研究、材料模拟基础方法（电子结构、原子层次模拟）、多尺度多物理模拟、以及新型功能材料的研究与开发。

Research on computational materials science and nanomaterial, basic methods for material simulation (electronic structure simulation, atomic level simulation), multi-scale and multi-physics simulation, and research and development of new functional materials.

三、学习年限（Length of programs）

国际博士研究生学习年限一般为3-5年，经批准可适当延长，延长时间不超过1年。

The general of doctoral programs is 3 to 5 years. Prolongation (no more than one year) needs approving by the university.

四、课程学习(Course work)

学术学位博士生课程学习应至少取得12学分，包括：公共课（汉语（II）2学分、中国概况（II）2学分）4学分，专业学位课至少4学分，选修课至少4学分。

The academic doctoral programs require at least 12 credits for course work. Required courses include *Comprehensive Chinese II* (2 credits), *Outline of China II* (2 credits), degree courses (no less than 4 credits), and elective courses (no less than 4 credits).

必修环节包括：学术活动（讲座）2学分、开题报告2学分、中期考核6学分。

Other compulsory activities include academic lectures (doctoral) (2 credits), dissertation proposal (2 credits), and mid-term assessment (6 credits).

材料及物理类国际博士研究生课程设置和学分要求

(Curriculum and Credits Requirements of Doctoral Programs in Materials and Physics)

| 课程类型 Course Type | 序号 No. | 全校统一编码 Course Code | 课程名称* Course Title | 学分 Credit | 备注 Notes |
|------------------------|-----------|-----------------------|---------------------------------|--------------|--------------------------------|
| 公共学位课 Public Course | 1 | LITE610112 | 中国概况 (Outline of China) | 2 | 必修4学分 4 credits required |
| | 2 | LITE610227 | 综合汉语 (Comprehensive Chinese) | 2 | |



| 课程类型 Course Type | 序号 No. | 全校统一编码 Course Code | 课程名称* Course Title | 学分 Credit | 备注 Notes |
|------------------------|-----------|-----------------------|---|--------------|---|
| 专业学位课 Degree Course | 1 | MATL750302 | 固态相变 (Phase Transitions in Solid) | 2 | 至少修 4 学分 A minimum of 4 credits required |
| | 2 | MATL740202 | Frontiers of Materials Science | 2 | |
| | 3 | MATL712902 | 材料物理性能 (Physical Properties of Materials) | 2 | |
| | 4 | MATL711302 | 智能材料 (Smart Materials) | 2 | |
| | 5 | EELC612005 | Principles Of Electronic Materials And Devices | 2 | |
| 选修课 Elective Course | 1 | EELC611905 | Electronic thin films and applications | 2 | 至少修 4 学分 A minimum of 4 credits required |
| | 2 | MATL740402 | Electron Microscopy and its Application in Materials Science | 2 | |
| | 3 | MATL740502 | Advanced Energy Materials | 2 | |
| | 4 | ELEC714504 | 科技论文写作 (Scientific Writing) | 1 | |
| | 5 | EELC713605 | Introduction To Electron Microscopy | 2 | |
| | 6 | BIME840128 | 骨组织修复与再生材料 (Biomaterials for Bone Repair and Regeneration) | 2 | |
| | 7 | MATL640128 | 磁学导论与磁性材料 (Magnetism Fundamentals and Magnetic Materials) | 2 | |
| | 8 | BASM611815 | 诺贝尔奖论文剖析 (The Analysis of the Articles Acquired Nobel Prize) | 2 | |
| | 9 | PUBH610615 | 数据管理与分析 (Management and Analysis of Data) | 2 | |
| | | | Elective courses under your advisors' suggestion | | |
| 必修环节 Compulsory | 1 | BXHJ800399 | 学术活动(讲座)(博) (Lectures)(Doctoral) | 2 | 必修 10 学分 10 credits |



| 课程类型 Course Type | 序号 No. | 全校统一编码 Course Code | 课程名称* Course Title | 学分 Credit | 备注 Notes |
|---------------------|-----------|-----------------------|---------------------------------|--------------|-------------|
| Activities | 2 | BXHJ800499 | 开题报告 (Dissertation Proposal) | 2 | required |
| | 3 | BXHJ800199 | 中期考核 (Mid-term Assessment) | 6 | |

*有些英文课程没有中文名称，以课程编号为准。

For courses without Chinese titles, check the course code when selecting courses.

五、培养环节 (Compulsory Activities)

1. 学术活动 (讲座) (Lectures)

国际博士研究生学术活动 (讲座) 分为必听讲座和选听讲座。必听讲座为“科学道德与学风建设”；选听讲座包括与学科紧密相关的“学科前沿系列专题讲座” (由各二级学科组织若干教授对本学科前沿知识进行讲座，每个专题讲座由 5 个以上讲座组成) 一个系列和在全校范围内选听“学术讲座”1 次，自己公开讲座 1 次，完成后记 2 学分。新港报告纳入国际留学生选修课，学生听够 20 场讲座后可记 2 学分。

Doctoral students are required to attend 7 lectures, including: a compulsory one on scientific morality, 5 lectures in a series regarding discipline-specific frontiers information (organized by respective individual school), and 1 elective lecture. In addition, doctoral candidates are required to give a lecture by students themselves. Students will obtain 2 credits by completing the whole series of activities. Innovation Harbour Lectures are included in elective courses for international students, 2 credits will be granted after attending 20 Lectures.

2. 开题报告 (Dissertation Proposal)

博士研究生一般在第三学期组织开题，需提交选题报告，并参与答辩报告会。选题报告使用英文填写《博士研究生学位论文选题报告》，主要内容包括：选题的科学依据、主要研究内容和方案、研究计划及预期进展。准备英文版 PPT，用英文答辩、问答，每位同学个人陈述 15-20 分钟，评审专家提问环节 5-10 分钟。评审专家组一般至少由 4 位以上教师组成。评审专家根据研究生选题报告以及现场答辩情况给出评审结果。通过后记 2 学分。

Doctoral students should complete dissertation proposal reporting in the third semester, deciding on the topic of doctoral dissertation. The dissertation should be completed in English. The main contents include the scientific basis for the topic chosen, the main contents, research plans and expected results. Students are required to present the proposal in PPT slides and deliver in English in 15-20 minutes, and question-answer session will last 5-10 minutes. The reviewer panel is made up of at least four or more professors. Students will obtain 2 credits by completing the whole series of activities.

3. 中期考核 (Mid-term Assessment)

中期考核一般在第四学期完成，需提交《中期进展报告》、成绩单，并参加答辩报告会。中期报告使用英文填写《中期进展报告》，经导师签字确认。准备英文版 PPT，用英文答辩、问答，每位同学个人陈述 15-20 分钟，评审专家提问环节 5-10 分钟。评审专家小组应由至少 5-7 名本学科



或相关学科博士生导师组成。专家依据博士研究生的论文课题进展情况进行考核，必要时可参阅其课程学习和选题报告情况进行综合评议，并给出考核结果。

The mid-term assessment is generally completed in the fourth semester. It is required that students submit the “Med-term Progress Report” and transcripts. The report is completed in English and signed by the tutor. Students will deliver the depart in PPT slides and speak in English for 15-20 minutes and question-answer session will be in English and will last for 5-10 minutes. The reviewer panel is made up of at least 5-7 doctoral supervisors of the discipline undertaken and the related disciplines.

博士生中期考核实行分流机制，考核结果纳入学生成绩管理，中期考核合格者将获得相应学分。在本次考核中，中期考核不合格者将被确定为初步分流对象；凡培养计划中任何一门课程不及格，或未完成之前的选题报告，或未经学院批准无故不参加中期考核者将被直接认定为初步分流对象。被认定为初步分流对象的博士研究生仍可申请参加在随后一学期的补考核（具体时间由学院确定）。凡在补考核中，仍未通过者，均视为补考核不通过，并将被认定为最终分流对象。

博士中期考核合格后记 6 学分。

The doctoral student's mid-term assessment is important. Those who pass the mid-term assessment will obtain 6 credits. Those who fail in the mid-term assessment will have a second chance. And if they still fail another time, they will be terminated from their doctoral program. Candidates who fail in any course work, or who hasn't completed completing dissertation proposal or who was absent from mid-term assessment without approval will be the students to be terminated from their program if they fail again in the second chance given.

4. 预答辩 (Pre-oral dissertation defense reporting)

研究生完成学位论文及培养计划规定的内容后，在规定的时间内提交学位申请书、学位论文、学习成绩单以及在学期间发表的学术论文和取得的研究成果证明，在指导教师审查同意后组织预答辩。

After the completion of the dissertation, students are required to take part in the pre-oral dissertation defense reporting meeting. Before the meeting, the doctoral candidates are to submit the degree application, dissertation, academic transcript, journal articles and the proof of research results to the office managing the graduate affairs.

5. 学位论文 (Dissertation)

对博士研究生，学位论文应在指导老师指导下由研究生本人独立完成，如果实际科研中存在多位指导老师，在学位论文上应同时署名多位导师。论文应在科学或专门技术上做出创造性成果，并在理论上或实际上，对社会主义建设有较大的意义；用于博士学位论文的工作时间一般应有 2 个学年左右。

The dissertation should be completed independently by the graduate candidates under the guidance of their supervisor. If there are two or more supervisors for a candidate, all of them will sign their names on the copyright page and innovation announcement page of the dissertation. The dissertation research should demonstrate the research has brought about innovative findings in science or technology, and the results are significant in theory or practice to the development of the country. The working time for doctoral dissertations research generally is about 2 academic years.

学位论文内容一般应包括：独创性声明、保护知识产权声明、中英文摘要、目录、引言、正



文（理论分析；实验装置和测试方法；对实验结果的分析、讨论与理论计算结果的比较）、结论、致谢、参考文献、攻读博士学位期间的研究成果及附录等。博士学位论文 5 万字左右。文字要语句精练通顺，条理分明，文字、图表清晰整齐。

The structure of the dissertation generally includes the following sections: statement of originality, statement of protection of intellectual property rights, abstract, contents page, introduction, body of the text (theoretical analysis; experimental setup and methods; analysis of experimental results, comparison of discussion and theoretical results), conclusion, acknowledgments, references, research results during the PhD study and appendices. The doctoral dissertation is about 50,000 words long. The dissertation must be read smooth, logical, and the graphs and characters must be clear in print.

六、培养环节时间节点(Timeline and milestones)

| 博士 Doctoral program | 课程学习 Course Work | 开题报告 Dissertation Proposal | 中期考核 Mid-term Assessment | 预答辩 Pre-oral dissertation defense reporting | 论文答辩 Oral Dissertation Defense |
|----------------------------------|--|--|---|---|---|
| 时间点 Timeline | 第一年 First Year | 第三学期 Third Semester | 第四学期 Fourth Semester | 对应学位会指定日期之前 Before the designated date of the corresponding degree committee meeting | 对应学位会指定日期 之前 Before the designated date of the corresponding degree committee meeting |
| 具体要求 Specific requirements | 完成课程 设置要求 的所有 内容 Complete all the course work | 提交选题报 告、通过答 辩 Submit dissertation proposal and report it in a meeting to pass it | 提交中期考 核报告、通 过答辩 Submit the mid-term assessment report and pass the oral defense | 完成通过所有课程、必修环 节考核，满足所在中心毕业 要求，完成博士学位论文初 稿并通过学术不端检测 Complete all course work compulsory activities, fulfill other graduation requirements, complete doctoral dissertation and pass the academic misconduct test | 完成预答辩，通过送 审，经过答辩审批 Complete the pre-oral defense reporting, pass the dissertation reviewing, and pass the oral dissertation defense |

（二）生物类博士研究生培养方案（适用于生物工程与再生医学研究中心、转化医学研究中心、线粒体生物医学中心、神经和疾病研究中心和骨骼关节疾病与治疗研究中心的普通博士研究生）

Doctoral programs in biomedical field, applicable to doctoral students in Center for Biomedical Engineering and Regenerative Medicine (CBERM), Center for Translational Medicine(CTM), Center for Mitochondrial Biology and Medicine (CMBM), Center for Neuron and Disease(CND), Bone and Joints Research Center(BJRC) .

一、培养目标（Program objectives）



为满足社会的需求，以培养为科研、教学和高技术产业服务的德、智、体全面发展的生物医学领域人才为目标，具体要求为：

The programs aim to cultivate talents in morality, intelligence and physique, intellectual and physical development who serve the scientific research/teaching/high-tech industries. The detailed contents are as below:

1. 热爱祖国，遵纪守法，积极为国家和社会发展服务。

Students love the motherland, respect the law, and positively serve the development of the country and the society.

2. 在生物医学领域掌握坚实宽广的基础理论和系统深入的专门知识；在所从事的研究方向上做出创造性成果。

Students have mastered solidly and broadly basic theories, and systematic detailed specialized knowledge in biomedical field, and have made innovative achievements in the area of research.

3. 具有独立从事科学研究工作的能力；具有实事求是，科学严谨的治学态度和工作作风。

Students have developed the ability to work independently in scientific research and a down-to-earth work style and rigorous academic attitude.

4. 掌握一门外语，熟练的进行书面和口头交流，阅读外文资料。

Students have mastered a foreign language, and can communicate skillfully in written and oral and read literature in that foreign language..

二、研究方向（Research fields）

1. 以干细胞生物工程与再生医学为研究目标，研发先进的新型生物医用材料，生物分子和药物的控制释放技术，诱导干细胞的分化，用动物模型试验结合基础研究来探索生物材料组织再生的机制。主要研究方向包括：先进的新型可降解生物材料合成与应用；生物分子和药物的控制释放技术；生物材料与组织工程。

The research activities include the following: stem cell bioengineering and regenerative medicine, advanced new biomedical materials and controlled release technology for biomolecules and drugs to induce stem cell differentiation, and the mechanism of biomaterials for tissue regeneration based on basic research in animal model experiments. The main areas of research include the following: the fabrication and application of advanced biodegradable biomaterials; the controlled release technology of biomolecules and drugs; biomaterials for tissue engineering.

2. 致力于具有广泛临床应用前景的多学科基础生物医学研究，涉及学科包括多肽与蛋白质化学、结构生物学、肿瘤生物学、微生物学、免疫学、纳米药学等。通过多学科交叉研究肿瘤、感染性疾病和免疫性疾病的发病机制；设计开发抗肿瘤和抗感染的多肽类药物以及它们的递送手段。

Multidisciplinary basic biomedical research with a wide range of clinical applications, including peptide and protein chemistry, structural biology, tumor biology, microbiology, immunology, nano-pharmaceutical and so on; the pathogenesis of tumors, infectious diseases and immune diseases based on multidisciplinary studies; Designing and developing the anti-tumor and anti-infective peptide drugs and their delivery strategies.



3. 以线粒体代谢为研究重点，致力于探讨衰老及衰老相关疾病在分子细胞生物学水平上的调控机制，开发靶向于调控线粒体代谢的营养素和药物，从而有效预防和治疗各种疾病的发生发展。

With mitochondrial metabolism as key of studies,, exploring the regulation mechanism of ageing and ageing-related diseases at the level of molecular and cellular biology, and developing nutrients and drugs that target the regulation of mitochondrial metabolism

4. 致力于神经和相关疾病的基础研究，建立研究人类疾病的动物模型。主要探索认知以及脑疾病中的分子机制、寻找新的信号分子蛋白、研究其生理机制以及在发育过程和病理状态下的功能变化、明确信号分子在认知过程和脑疾病发生和发展过程中的地位和作用。

Basic research on nerves and related diseases and establishment of animal models for treating human diseases; the molecular mechanisms in cognition and brain diseases, new signaling molecules, their physiological mechanisms, and functions in the developmental and pathological states; and the status and role of signaling molecules in in cognitive processes and the development and progression of brain diseases.

5. 致力于骨、软骨、肌肉和其它关节软组织发育和衰老的基础研究，建立研究人类骨骼肌肉关节疾病的动物模型，发展诊断和治疗相关疾病的纳米医学和组织工程学，包括：细胞外基质，软骨和骨组织工程，软骨和骨的机械调控，骨关节炎、骨质疏松和其它关节退行性疾病的机制研究、创伤、糖尿病、衰老、绝经以及各种免疫及代谢性疾病引起的骨质疏松和骨关节炎，骨骼的免疫调控及骨骼细胞内信号转导、急性和慢性感染及炎症对于骨骼的影响、骨髓及间充质干细胞的增值分化和对骨、软骨、肌肉细胞分化代谢的调控、骨折和骨折愈合、研发天然药物和传递以预防诊断和治疗骨质疏松，骨关节炎，以及其它骨骼肌肉关节疾病。

The fundamental research of the development and ageing of bone, cartilage, muscle and other joint soft tissues, establishment of animal models for the study of human skeletal muscle and joint diseases, the development of nanomedicine and tissue engineering for the diagnosis and treatment of related diseases, including: extracellular matrix, tissue engineering of cartilage and bone, mechanical regulation of cartilage and bone, mechanisms of osteoarthritis, osteoporosis and other joint degenerative diseases, osteoporosis and osteoarthritis caused by trauma, diabetes, aging, menopause, and various immune and metabolic diseases, immune regulation of bones and signal transduction in bone cells, effects of acute and chronic infections and inflammation on bones, proliferation and differentiation of bone marrow and mesenchymal stem cells and regulation of differentiation and metabolism of bone, cartilage and muscle cells, fracture and fracture healing, development of natural medicines and transmission to prevent diagnosis and treatment of osteoporosis, osteoarthritis, and other musculoskeletal joint diseases.

三、学习年限 (Length of program)

国际博士研究生学习年限一般为 3-5 年，经批准可适当延长，延长时间不超过 1 年。

The length of doctoral programs is 3 to 5 years. Prolongation (no more than one year) has to be approved by the university.

四、课程学习(Course work)

学术学位博士生课程学习应至少取得 12 学分，包括：公共课（汉语（II）2 学分、中国概况



(II) 2 学分) 4 学分, 专业学位课至少 4 学分, 选修课至少 4 学分。

The academic doctoral programs require at least 12 credits for course work. Required courses include *Comprehensive Chinese II* (2 credits), *Outline of China II* (2 credits), degree courses (no less than 4 credits), and elective courses (no less than 4 credits).

必修环节包括: 学术活动(讲座) 2 学分、开题报告 2 学分、中期考核 6 学分。

Other compulsory activities include academic lectures (doctoral) (2 credits), dissertation proposal (2 credits), and mid-term assessment (6 credits).

生物医学类国际博士研究生课程设置和学分要求

(Curriculum Design and Credit Requirements of Doctoral Programs in Biomedical field)

| 课程类型 Course Type | 序号 No. | 全校统一编码 Course Code | 课程名称 Course Title | 学分 Credit | 备注 Notes |
|---------------------------|-----------|-----------------------|---|--------------|---|
| 公共学位课 Public Course | 1 | LITE610112 | 中国概况 (Outline of China) | 2 | 必修 4 学分 4 credits required |
| | 2 | LITE610227 | 综合汉语 (Comprehensive Chinese) | 2 | |
| 专业学位课 Degree Course | 1 | BIOL610113 | 高等分子细胞生物学(Advanced Molecular Biology of Cell) | 2 | 至少修 4 学分 A minimum of 4 credits required |
| | 2 | BASM611415 | 组织化学与免疫组织化学 (Histochemistry and Immunohistochemistry) | 2 | |
| | 3 | BIOL611115 | 医学分子生物学 (Medical Molecular Biology) | 2 | |
| | 4 | MACH741101 | 先进医疗器械设计方法 (Design Methodology of Advanced Medical Devices) | 2 | |
| | 5 | MATL740202 | 材料科学前沿 (Frontiers of Materials Science) | 2 | |
| | 6 | BIOL640213 | Mitochondrial Biology and Medicine | 2 | |
| 选修课 Elective Course | 1 | MACH741001 | 电活性功能材料与结构导论特性 与应用 (Electroactive Polymer Materials and Structures Properties and Applications) | 2 | 至少修 4 学分 A minimum of 4 credits required |
| | 2 | MATL711302 | 智能材料 (Smart Materials) | 2 | |
| | 3 | MATL740402 | 电子显微镜在材料科学中的应用 (Electron Microscopy and its Application in Materials Science) | 2 | |



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|-------------------------------|-----------|-----------------------|--|--------------|---------------------------------|
| | 4 | ELEC714504 | 科技论文写作 (Scientific Writing) | 2 | |
| | 5 | BASM610815 | 现代生物技术 (Modern Biotechnology) | 2 | |
| | 6 | PUBH610615 | 数据管理与分析 (Management and Analysis of Data) | 2 | |
| | 7 | BASM611715 | 医学科学研究导论 (Introduction of the Research in Medical Science) | 2 | |
| | 8 | BASM611615 | 动物实验与实验动物学 (Animal Experiment and Laboratory Animal Science) | 2 | |
| | 9 | BIME840128 | 骨组织修复与再生材料 (Biomaterials for Bone Tissue Repair and Regeneration) | 2 | |
| | 10 | BASM611815 | 诺贝尔奖论文剖析 (The analysis of the articles acquired Nobel Prize) | 2 | |
| 必修环节 Compulsory Activities | 1 | BXHJ800399 | 学术活动(讲座)(博) (Lectures)(Doctor) | 2 | 必修 10 学分 10 credits required |
| | 2 | BXHJ800499 | 开题报告 (Dissertation Proposal) | 2 | |
| | 3 | BXHJ800199 | 中期考核 Mid-term Assessment | 6 | |

五、培养环节 (Compulsory Activities)

1. 学术活动 (讲座) (Lectures)

国际博士研究生学术活动 (讲座) 分为必听讲座和选听讲座。必听讲座为“科学道德与学风建设”; 选听讲座包括与学科紧密相关的“学科前沿系列专题讲座” (每个专题讲座由 5 个以上本学科讲座组成) 一个系列和在全校范围内选听“学术讲座”1 次, 自己公开讲座 1 次, 完成后记 2 学分。新港报告纳入国际留学生选修课, 学生听够 20 场讲座后可记 2 学分。

The lectures for international doctoral students include compulsory lectures and elective lectures. The compulsory lectures are composed of the lectures about scientific ethics and academic atmosphere construction. The elective lectures consists of discipline-related series of lectures about frontier development (5 lectures in a series regarding discipline-related lectures organized by respective individual



schools), and 1 elective lecture in the university. In addition, they are also required to give an open lecture. With all the lectures described above attended, students can get 2 credits for the lectures required. Innovation Harbour Lectures are included in elective courses for international students, 2 credits will be granted after attending 20 Lectures.

2. 开题报告 (Dissertation Proposal)

博士研究生一般在第三学期组织开题, 需提交选题报告, 并参与答辩报告会。选题报告使用英文填写《博士研究生学位论文选题报告》, 主要内容包括: 选题的科学依据、主要研究内容和方案、研究计划及预期进展。准备英文版 PPT, 用英文答辩、问答, 每位同学个人陈述 15-20 分钟, 评审专家提问环节 5-10 分钟。评审专家组一般至少由 4 位以上教师组成。评审专家根据研究生选题报告以及现场答辩情况给出评审结果。通过后记 2 学分。

Doctoral students should complete dissertation proposal reporting in the third semester, deciding on the topic of doctoral dissertation. The dissertation should be completed in English. The main contents include the scientific basis for the topic chosen, , the main contents, research plans and expected results. Students are required to present the proposal in PPT slides and deliver in English in 15-20 minutes; and question-answer session will last 5-10 minutes. The reviewer panel is made up of at least four or more professors. Students will obtain 2 credits by completing the whole series of activities.

3. 中期考核 (Mid-term Assessment)

中期考核一般在第四学期完成, 需提交《中期进展报告》、成绩单, 并参加答辩报告会。中期报告使用英文填写《中期进展报告》, 经导师签字确认。准备英文版 PPT, 用英文答辩、问答, 每位同学个人陈述 15-20 分钟, 评审专家提问环节 5-10 分钟。评审专家小组应由至少 5-7 名本学科或相关学科博士生导师指导教师组成。专家依据博士研究生的论文课题进展情况进行考核, 必要时可参阅其课程学习和选题报告情况进行综合评议, 并给出考核结果。

The mid-term assessment is generally completed in the fourth semester. It is required that students submit the “Med-term Progress Report” and transcripts. The report is completed in English and signed by the tutor. Students will deliver the depart in PPT slides and speak in English for 15-20 minutes and question-answer session will be in English and will last for 5-10 minutes. The reviewer panel is made up of at least 5-7 doctoral supervisors of the discipline undertaken and the related disciplines.

博士生中期考核实行分流机制, 中期考核合格者将获得相应学分。在本次考核中, 中期考核不合格者将被确定为初步分流对象; 凡培养计划中任何一门课程不及格, 或未完成之前的选题报告, 或未经学院批准无故不参加中期考核者将被直接认定为初步分流对象。被认定为初步分流对象的博士研究生仍可申请参加在随后一学期的补考核 (具体时间由学院确定)。凡在补考核中, 仍未通过者, 均视为补考核不通过, 并将被认定为最终分流对象。

博士中期考核合格后记 6 学分。

The doctoral student's mid-term assessment is important. Those who pass the mid-term assessment will obtain 6 credits. Those who fail in the mid-term assessment will have a second chance. And if they still fail another time, they will be terminated from their doctoral program. Candidates who fail in any course work, or who hasn't completed completing dissertation proposal or who was absent from mid-term assessment without approval will be the students to be terminated from their program if they fail again in the second chance given.



4. 预答辩 (Pre-defense Report)

研究生完成学位论文及培养计划规定的内容后，在规定的时间内提交学位申请书、学位论文、学习成绩单以及在学期间发表的学术论文和取得的研究成果证明，在指导教师审查同意后组织预答辩。

After the completion of the dissertation, students are required to take part in the pre-oral dissertation defense reporting meeting. Before the meeting, the doctoral candidates are to submit the degree application, dissertation, academic transcript, journal articles and the proof of research results to the office managing the graduate affairs.

5. 学位论文 (Dissertation)

对博士研究生，学位论文应在指导老师指导下由研究生本人独立完成，如果实际科研中存在多位指导老师，在学位论文上应同时署名多位导师。论文应在科学或专门技术上做出创造性成果，并在理论上或实际上，对社会主义建设有较大的意义；用于博士学位论文的工作时间一般应有 2 个学年左右。

The dissertation should be completed independently by the graduate candidates under the guidance of their supervisor. If there are two or more supervisors for a candidate, all of them will sign their names on the copyright page and innovation announcement page of the dissertation. The dissertation research should demonstrate the research has brought about innovative findings in science or technology, and the results are significant in theory or practice to the development of the country. The working time for doctoral dissertations research generally is about 2 academic years.

学位论文内容一般应包括：独创性声明、保护知识产权声明、中英文摘要、目录、引言、正文（理论分析；实验装置和测试方法；对实验结果的分析、讨论与理论计算结果的比较）、结论、致谢、参考文献、攻读博士学位期间的研究成果及附录等。博士学位论文 5 万字左右。文字要语句精练通顺，条理分明，文字、图表清晰整齐。

The structure of the dissertation generally includes the following sections: statement of originality, statement of protection of intellectual property rights, abstract, contents page, introduction, body of the text (theoretical analysis; experimental setup and methods; analysis of experimental results, comparison of discussion and theoretical results), conclusion, acknowledgments, references, research results during the PhD study and appendices. The doctoral dissertation is about 50,000 words long. The dissertation must be read smooth, logical, and the graphs and characters must be clear in print.

六、培养环节时间节点(Timeline and milestones)

| 博士 Doctoral program | 课程学习 Course Work | 开题报告 Dissertation Proposal | 中期考核 Mid-term Assessment | 预答辩 Pre-oral dissertation defense reporting | 论文答辩 Oral Dissertation Defense |
|---------------------------|------------------------|----------------------------------|--------------------------------|---|---|
| 时间点 Timeline | 第一年 First Year | 第三学期 Third Semester | 第四学期 Fourth Semester | 对应学位会指定日期之前 Before the designated date of the corresponding degree committee meeting | 对应学位会指定日期之前 Before the designated date of the corresponding degree committee meeting |



| 博士 Doctoral program | 课程学习 Course Work | 开题报告 Dissertatio n Proposal | 中期考核 Mid-term Assessment | 预答辩 Pre-oral dissertation defense reporting | 论文答辩 Oral Dissertation Defense |
|----------------------------------|---|--|---|---|---|
| 具体要求 Specific requirements | 完成课程设 置要求的所 有内容 Complete all the course work | 提交选题 报告、通 过答辩 Submit dissertatio n proposal and report it in a meeting to pass it | 提交中期考 核报告、通 过答辩 Submit the mid-term assessment report and pass the oral defense | 完成通过所有课程、必修 环节考核，满足所在中心 毕业要求，完成博士学位 论文初稿并通过学术不端 检测 Complete all course work compulsory activities, fulfill other graduation requirements, complete doctoral dissertation and pass the academic misconduct test | 完成预答辩，通过送 审，经过答辩审批 Complete the pre-oral defense reporting, pass the dissertation reviewing, and pass the oral dissertation defense |