

國立陽明交通大學物理研究所 112 學年度博士生修業規章
Academic Regulations for Doctoral Students of National Yang Ming Chiao Tung
University Institute of Physics in Academic Year 2023

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第一條 入學資格

Article 1 Admission Qualifications

一、博士班入學考試：〔請依當年度招生簡章之規定〕

(一) 審查佔 50%；口試佔 50%

(二) 考試科目：量子力學、電動力學、應試者過去研究相關科目。

(三) 報考時請繳交大學及研究所歷年成績單正本一份、推薦函二封、碩士論文或相當碩士論文著作、自傳及研習計劃各一篇、及其他資料如：大學學力測驗、成績單、專題報告、已發表在學術期刊的論文等有助於審查之文件影本。

1. Doctoral Program Entrance Examination: (Please follow the current year's admissions guidelines)

(1) Review: 50%; Oral Defense: 50%

(2) Examination subject: Quantum Mechanics, Electrodynamics, and subjects related to the candidate's past research.

(3) The submitted applications for examination to Institute Office should include one official transcript for all semesters of undergraduate and master's program, two letters of recommendation, one master's thesis or a thesis equivalent to a master's thesis, one autobiography, one statement of purpose, and other useful supporting documents such as General Scholastic Ability Test, transcripts, project reports, and published papers in academic journals.

二、博士班推薦甄試：〔請依當年度招生簡章之規定〕

(一) 資料審查 50%；面試 50%

(二) 繳交資料：報名表、助理教授以上推薦函二封、自傳及讀書計劃各一篇、大學部及研究所歷年成績單（含名次）正本一份、研習計畫及有助於審查之文件影本。

2. Recommendation and Screening Examination of Doctoral Program: (Please follow the current year's admissions guidelines)

(1) Document review: 50%; Interview: 50%

(2) Documents to be submitted: one application form, two letters of recommendation by assistant professors or those higher in rank, one autobiography, one study plan, one official transcript for all semesters of undergraduate and master's program (with ranking), one statement of purpose and photocopies of other useful supporting documents.

三、逕修讀博士學位：〔請依當年度逕博作業規定〕

(一) 申請資格：

1. 學士班應屆畢業生（含申請提前畢業學生）具下列條件之一者：

- (1) 學業成績平均 85 分以上，具研究潛力者。
 - (2) 名次在該班學生前 10% 以內，具研究潛力者。
 - (3) 經所務會議評定為成績優異，具研究潛力者。
2. 碩士班學生，修業期間學業成績在該班前三分之一以內，或有其他特殊情形（如發表論文）經招生工作小組或其委託之招生審查會議評定為成績優異，具研究潛力者。
- (二) 申請者應於本所每年博士班甄試、入學考試或招生工作小組設定之報名期限前提出申請，繳交資料應包含申請表、含各學期名次證明之學士班與碩士班學業成績單、自傳及研習計畫各一篇、二封教師推薦信及其他有利審查之資料如獎項、著作、論文發表等送交所辦。
3. Direct Admission to Doctoral Program: (Please follow the current year's Regulations of Direct Admission to Doctoral Program)
 - (1) Applicant qualifications:
 - A. Undergraduate students who graduate in the current year (including those who apply to graduate early) and should meet one of the following requirements:
 - a. Their average score reaches 85 or above, and they have evident research potential.
 - b. Their ranks belong to the first 10% of their classes, and they have evident research potential.
 - c. Their grades are evaluated by the Institute Affairs Meeting as excellent, and they have evident research potential.
 - B. Master's students whose grades of each semester belong to the leading first-third during their study period, or those who have special experiences (e.g., they have published papers) and their grades are evaluated by the admissions working group or by commissioned admission examination committee as excellent, and they have evident research potential.
 - (2) Applicants should submit their application before the Recommendation and Screening Examination of Doctoral Program, Admission Examination, and the deadline set by admission working group of the Institute every year. The submitted applications to Institute Office should include one application form, one transcript for all semesters of undergraduate and master's program with ranking, one autobiography, one statement of purpose, two letters of recommendation by teachers, and other useful supporting documents such as rewards, articles, and published papers.

四、博士班轉所申請：

博士班研究生修業滿一學期以上，經原系所同意後，得申請轉入本所。轉所以一次為限。

- (一) 繳交資料：申請表、大學及研究所歷年成績單（含名次）正本一份、其他有利於審查文件。
- (二) 轉所申請，經本所招生工作小組會議審查通過並送教務長核定之。申請程序於開學前提出並經核定，於當學期生效；於學期中提出申請並經核定者，次學期生效。

4. Transfer of Institute Application for Doctoral Students:
After completing at least one semester of doctoral studies, graduate students may apply for transfer to the Institute, with the consent of their former department/institute. Each student is limited to transfer their institute once.

- (1) Documents to be submitted: one application form, one official transcript for all semesters of undergraduate and master's program (with ranking), and other supporting documents.
- (2) The application for transfer of institute will be reviewed and approved by the admission working group of the Institute and submitted to the Dean of Academic Affairs for approval. An application submitted and approved prior to the start of school shall take effect in the current semester, while an application submitted and approved in the mid-semester shall take effect in the following semester.

第二條 修業年限、學分

Article 2 Years of Study and Credit Requirements

一、博士班一般生修業年限以二至七年為限；在職生得延長二年。如未能於規定修業期限內通過學位考試或未能完成應修課程者，應令退學。

1. The year of study for full-time students enrolled in a doctoral program is two to seven years; and it can be extended for another two years for in-service students. Students who fail to pass the degree examination or to complete all the required courses within the specified period are required to drop out of NYCU.

二、學分數規定：應修 18 學分

逕修讀博士學位生：36 學分（含直升前碩士班課程學分）。

2. Credit requirement: 18 credits.
For students directly admitted to doctoral program: 36 credits (including the credits earned from the master's program before the direct admission).

三、抵免學分之規定：抵免學分依「學生抵免辦法」提出申請，繳交申請單、成績單及課程相關資料，經所課程委員會議通過，送教務處複核。抵免上限為 9 學分。

3. Credit transfer regulations: Students should submit an application for credit transfer in accordance with the Credit Transfer Regulations. The submitted application should include an application form, transcripts for all semesters, and other course-related documents. The applications should be approved by the Curriculum Committee of the Institute and submitted to the Office of Academic Affairs for examination. Students are allowed to transfer up to 9 credits.

第三條 論文指導教授及選課

Article 3 Dissertation Advisor and Course Requirements

一、論文指導教授

- (一) 博士班研究生隨時可申請「博士論文研究方向及指導教授」，但最遲必須在入學第二學年開學第一週前提出申請。逾期未敦請者，提交所務會議討論。
- (二) 本所學生須由本所專任教師任論文指導老師。若選定講座教授或合聘教授擔任指導教授，必須有本所專任教師共同指導。
- (三) 指導教授欲終止指導關係，應以書面文件向學生事務委員提出申請，審查結果由所長通知研究生。
- (四) 更換指導教授，應填具申請書說明理由，申請理由須經由新指導教授同意、

學生事務委員及所長審查通過，並於通知原指導教授後生效。在原指導教授提供原始構想或概念及受指導下所獲得之研究成果，須經原指導教授同意，始得作為學位論文。

本條文第三款、第四款追溯適用本所在學學生。

1. Dissertation advisor

- (1) Doctoral students may submit an application for the Doctoral Dissertation Research Direction and Advisor at any time, but the application must be submitted within the first week after the second academic year starts. Applications received past the deadline will be submitted to the Institute Affairs Meeting for discussion.
- (2) The dissertation of a student of the Institute must be advised by a full-time faculty member of the Institute. Students who invite a chair professor or jointly-appointed professor to be their advisor must be co-advised by a full-time faculty member of the Institute.
- (3) Advisors who wish to terminate the advising relationship should submit a written request to the Student Affairs Committee. The Institute Director will notify the graduate student of the review result.
- (4) Students who wish to change their advisor should fill out an application form stating the reasons. The reasons stated must be approved by the new advisor, and reviewed and approved by the Student Affairs Committee and the Institute Director. The application shall take effect after the former advisor is notified. Students must have the consent of the former advisor to use the research findings obtained under the original idea or concept provided and advised by them as the student's degree dissertation.

Paragraphs (3) and (4) of this Article apply retroactively to students enrolled in the Institute.

二、選課

(一) 研究生選修任何課程均需指導教授同意，新生尚未擇定指導教授者由本所學生事務負責人指導選課。

(二) 必修課程

1. 量子力學（一）（二）：6 學分
2. 電動力學（一）：3 學分
3. 統計力學（一）：3 學分
4. 書報討論須修滿四學期：4 學分
5. 電動力學（二）及統計力學（二）中必選一科：3 學分
6. 在以下四項類別中，擇不同類別裏的兩個科目修習：
 - (1) 固態物理（一）（二）或高等固態物理（一）
 - (2) 量子場論（一）或粒子物理（一）
 - (3) 原子分子物理（一）
 - (4) 本所同意之物理子領域課程
7. 學術研究倫理教育：依本校「學生學術及研究倫理教育課程實施辦法」規定修課。

備註一：進入本所博士班前所修之必修課程，申請後經本所核可者得免修之。（如欲申請抵免則按校方規定辦理）

備註二：本所經常開課之核心課程：

高能組	量子場論（一）（二）
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	粒子與場導論 粒子物理（一）（二） 廣義相對論 宇宙學簡介
凝態組	統計力學（二） 固態物理（一）（二） 高等固態物理（一）（二） 量子多體理論
原子分子組	原子分子物理（一）（二） 計算物理 數值分析

備註三：除非本所當學年度之必修或必選課程未開，或經課程委員會同意，否則不得至外系所修課。

2. Course requirement

- (1) Graduate students must have the consent of their advisor for the courses to be taken. New students who have not yet selected an advisor should be guided by the supervisor of student affairs for course selection.
- (2) Required courses
 - A. Quantum Mechanics (I) (II): 6 credits
 - B. Electrodynamics (I): 3 credits
 - C. Statistical Mechanics (I): 3 credits
 - D. Seminars for four semesters: 4 credits
 - E. One course must be chosen from Electrodynamics (II) and Statistical Mechanics (II): 3 credits
 - F. Two courses must be chosen from the following four categories:
 - a. Solid State Physics (I) (II) or Advanced Solid State Physics (I)
 - b. Quantum Field Theory (I) or Particle Physics (I)
 - c. Atomic and Molecular Physics (I)
 - d. Courses in a subfield of Physics that are approved by the Institute.
 - G. Academic Research Ethics Education: In accordance with the “Students Research Ethics Education Program Implementation Rules” required by NYCU.

Remark 1: Students who have taken the required courses before admitting to a doctoral program may submit an application to the Institute Office for course exemption upon approval by the Institute. (Applications for credit transfer should be in accordance with the NYCU regulations)

Remark 2: The core courses often offered by the Institute are as follows:

Particle Physics and Cosmology Group	Quantum Field Theory (I) (II) Introduction to Particle Field Particle Physics (I) (II) General Relativity Introduction to Cosmology
Condensed Matter Physics Group	Statistical Mechanics (II) Solid State Physics (I) (II) Advanced Solid State Physics (I) (II) Quantum Many-body Theory
Atomic and Molecular Physics Group	Atomic and Molecular Physics (I) (II) Computational Physics

Remark 3: Unless the required or required elective courses are not offered by the Institute in the current academic year or under the approval of the Curriculum Committee, students should not select courses outside of the Institute.

三、研究生選修教育學程應知會指導教授。

3. Graduate students should inform their advisor for taking the Teacher Education Program.

第四條 資格考試

Article 4 Qualifying Examination

資格考（含筆試與口試兩部份）須於入學後二年內通過，休學期間不計入。若無法通過則予以退學。

Students are required to pass the Qualifying Examination (both written and oral) within two years after admission; the period of suspension of study is not included in the calculation. Students who have not passed the examination within the period are required to drop out of NYCU.

一、筆試：滿足以下（一）（二）其中一項。

（一）含量子力學與電動力學兩科。

1. 選修本所開授之量子力學（一）及（二），且兩學期成績均及格。
2. 選修本所開授之電動力學（一），且學期成績及格。
3. 博士生申請學分抵免或免修時，可同時申請資格考鑑定。申請時需繳交申請表及原就讀學校歷年成績單。循序經任課老師初審同意後向課程委員會申請複審。課程委員會複審後，決定申請者該科資格考筆試是否可視為通過。
4. 若修課未及格、或抵免免修學分未通過資格考鑑定者，則應選擇旁聽本所相同課程（含交作業及參加考試），以取得達標準之成績，惟需徵得任課教師同意並向課程委員報備。

（二）指導教授亦可要求學生參加 GRE physics(advanced) 考試，以成績高（含）於 70% 為通過。（若在 60%~70% 之間則需指導教授強力推薦且經所務會議通過）

1. Written Examination: Students should meet one of the requirements specified in paragraphs (1) and (2) below.

(1) Including Quantum Mechanics and Electrodynamics.

- A. Complete the Quantum Mechanics (I) and (II) courses offered by the Institute, with a passing grade in both semesters.
- B. Complete the Electrodynamics (I) course offered by the Institute, with a passing grade.
- C. Doctoral students may apply for the Qualifying Examination when they are applying for credit transfer or course exemption. To apply, students should submit an application form and the transcripts for all semesters of the university where they study. The application will be reviewed by the Curriculum Committee after the initial approval of the class instructor. The Curriculum Committee will then decide whether the applicant is deemed

to have passed the written part of the Qualifying Examination for the subject.

- D. Applicants who fail to complete the course nor the Qualifying Examination requirement for credit transfer/course exemption are required to sit in the same course offered by the Institute (have to submit assignments and take examinations), in order to obtain a grade that meets the passing criteria. However, they must obtain the consent of the class instructor and notify the Curriculum Committee.
- (2) The advisor may also require the student to take the GRE physics (advanced) examination. The student should score at least 70 to pass the exam. (If the student scores between 60 and 70, he/she must be strongly recommended by the advisor and approved by the Institute Affairs Meeting to pass the written part of the Qualifying Examination)

二、口試：測驗學生對即將研究之主題與領域是否準備完全。

- (一) 申請者請就研究領域與主題準備論文計劃書 2-5 頁英文書面資料，於口試日期二週前持計畫書向所辦提出申請。考試時間為 60-90 分鐘，口試委員依其報告內容提相關問題，經由口試委員投票，同意票數超過一半（含）為口試通過標準。
 - (二) 由指導教授召集口試委員 3-5 人（限所內教師），指導教授列席但不參與投票。
 - (三) 口試申請至多二次。
2. Oral Defense: To examine if a student is well-prepared for the topic and field of study.
- (1) Applicants are required to prepare a 2-5 page written dissertation proposal in English on the field of study and topic and submit it to the Institute Office two weeks before the oral defense date. The oral defense will take 60-90 minutes to complete. The oral defense members will ask questions based on the content of the presentation. Students are deemed passing the oral defense with half of the votes and above gained from the oral defense members.
 - (2) The advisor should convene a committee that is composed of three to five oral defense members (limited to only faculty members of the Institute). The advisor will be present but will not participate in the voting.
 - (3) Each student is limited to take the oral defense twice.

三、若筆試至第四學期已全數通過，為期學生充分準備研究方向，在指導教授的同意下，口試期限得延至第五學期結束前舉行。

3. In order for a student to fully develop the research direction, the oral defense deadline of a student who has passed all sections of the written examination by the fourth semester may be extended to the end of the fifth semester with the consent of the advisor.

四、博士班學生通過資格考後，即成為本所博士學位候選人。

4. After passing the Qualifying Examination, doctoral students will become doctoral candidates.

第五條 博士學位考試

Article 5 Doctoral Degree Examination

一、學位考試規定依本校研究生學位授予作業規章之規定，但所內另行規定者，則依本所之規定。

1. The degree examination should follow the “Regulations for Master and Doctoral Degrees Conferment” of NYCU, unless otherwise prescribed by regulations stipulated by the Institute.

二、博士班研究生申請學位考試，至遲應於口試日前兩周提出申請。畢業論文口試於每學期學位考試日程內舉行，如需延期，第一學期至遲須於元月三十一日前，第二學期至遲須於七月三十一日前舉行。論文考試舉行前，博士班研究生應完成論文原創性比對報告並供考試委員參考；於論文考試結束後，由指導教授於學位考試成績資料表簽核確認。

2. Doctoral students should submit the application for degree examination at least two weeks before the oral defense date. The dissertation oral defense should be conducted within the degree examination schedule specified for each semester. Those who fail to do so are required to have it completed no later than January 13 for the first semester, and no later than July 31 for the second semester. Before the examination is conducted, doctoral students should complete the dissertation originality comparison report and submit it to the Examination Committee for reference. After the examination, the advisor should sign the Degree Examination Result Form for confirmation.

三、口試以公開舉行為原則，須於事前公佈口試時間、地點及論文題目。

3. All oral defenses must be conducted in an open manner. The time and place of the oral defense, as well as the title of dissertation, must be announced in advance.

四、博士學位考試委員會置委員五至九人，其資格由所教評會審核之，並由單位主管簽請校長核發考試委員暨召集人聘函。校內外委員須三分之一（含）以上，指導教授不得兼任召集人。

(一) 現任或曾任教授、副教授。

(二) 中央研究院院士、現任或曾任中央研究院研究員、副研究員。

(三) 獲有博士學位，且在學術上著有成就。

(四) 研究領域屬於稀少性或特殊性學科，且在學術或專業上著有成就。

博士班研究生之配偶、前配偶或三等親內之血親、姻親，不得擔任其博士班學位考試委員。

4. The Doctoral Degree Examination Committee should be composed of five to nine members, whose qualifications should be reviewed by the Teacher Evaluation Committee. The head of the unit should then submit a request to the University President for the approval of the appointment letter for the member of Examination Committee and the convener. At least one-third of the personnel from within and outside the University should be appointed as the committee members. Advisors are not allowed to serve as the convener.

(1) A current or former professor or associate professor.

(2) An academican of Academia Sinica, a current or former researcher or associate researcher of Academia Sinica.

(3) A doctoral degree holder with outstanding academic accomplishments.

(4) Specializes in the field of study that is considered a rare or special discipline,

and is with outstanding academic or professional accomplishments.

The doctoral students' spouses, ex-spouses or those who are related to the students by blood or marriage within the third degree of consanguinity are not allowed to serve as a member of the Doctoral Degree Examination Committee.

- 五、學位考試委員應親自出席委員會，不得委託他人為代表，至少應有委員五人出席，始得舉行。
5. All members of a Degree Examination Committee must attend the oral defense in person. Stand-ins are not permitted. An oral defense for doctoral degree should be attended by at least five committee members.
- 六、博士論文考試成績以 B-(百分制七十分)為及格，A+(百分制一百分)為滿分，出席委員如有逾三分之一以上委員評定不及格者即以不及格論；論文考試成績以出席口試委員記名評定分數平均決定之。
6. The passing grade for the Doctoral Oral Defense is B- (70 points on a 100-point scale), with A+ (100 points on a 100-point scale) being the top grade. The oral defense is deemed “failed” when the scores graded by more than a third of the present members are below the passing grade. The results should be determined by the average signed scores graded by the present members.
- 七、博士學位考試不及格，而其延長修業年限尚未屆滿者，得於次學期至修業年限內，申請重考，重考以一次為限，重考不及格者，即令退學。凡逕修讀博士學位之研究生，其博士學位考試不及格而合於碩士學位標準者，得由博士學位考試委員會之決議改授碩士學位。
7. Students who fail the Doctoral Degree Examination and have not reached the limit of the extended study period may apply for a retake in the following semester within the extended study period. Each student is limited to one retake. Students who fail the retake of the oral defense should be required to drop out of NYCU. Graduate students directly admitted to the doctoral program who fail the doctoral degree examination, yet they meet the standards for a master's degree, may be conferred a master's degree upon a resolution by the Doctoral Degree Examination Committee.
- 八、論文通過口試者由口試委員明示論文修改方向及要點，做為學生修改論文之依據，學生修改論文後應提交論文審查，論文審查至少須經三分之二考試委員同意始為通過。修改後之論文定稿應完成論文原創性比對報告並經指導教授確認。論文審查不另評分，論文審查通過者，由出席論文考試之委員簽署「論文口試委員會審定書」。完成論文審定者，論文考試成績即為學位考試成績。
8. Students who have passed the oral defense should revise their dissertation according to the revision direction and main points indicated by the oral defense members. Students should submit the revised dissertation for review and the revision must be approved by at least two-thirds of the oral defense committee members to pass the degree examination. **After the thesis is finalized, students should complete the originality comparison report and confirm it with their advisors.** The revised dissertation will not be further graded during the review process. After students passing the dissertation review, the oral defense committee members present will sign the Authorization of the Oral Defense Examination Committee. For those who have completed the process of dissertation review, the thesis examination result

will be the degree examination result.

- 九、學位考試通過後，應於考試當學期繳交「學位考試成績資料表」至註冊組，第一學期需於1月31日前繳交；第二學期需於7月31日前繳交。

通過學位考試之研究生，應繳交學位考試成績資料表、學位論文紙本、學位論文原創性比對報告、學位論文學術倫理暨原創性比對聲明書，將論文摘要及全文電子檔上網建檔，並完成畢業離校程序後，註冊組始得發給學位證書。

學位論文紙本之繳交期限為舉行學位考試日的次學期上課開始日最後一個工作日，逾期未繳交論文紙本且未達修業年限者，次學期仍應註冊。

修業年限屆滿者，未於年限屆滿當學期繳交學位考試成績資料表或未於次學期上課開始日最後一個工作日前繳交紙本論文，應予退學。

本條文追溯適用本所在學學生。

9. After passing the degree examination, students are required to submit the Degree Examination Results Form to the Registration Section in the semester in which the examination is taken, by January 31 for the first semester and by July 31 for the second semester.

Students who have passed the degree examination should submit the Degree Examination Results Form, the hardcopy of the degree thesis, the originality comparison report, the Dissertation Academic Ethics and Originality Comparison Statement, and submit the thesis abstract and full-text electronic files online, and after completing the graduation and leaving school procedures, the Registration Section will issue a degree certificate.

The hardcopy of the degree dissertation should be submitted by the last working day of the semester in which the degree examination is taken, before the day of class start of the following semester. Nevertheless, students who have not submitted the hardcopy of the dissertation by the deadline and are within the study period should register their study status in the following semester.

Students who have not submitted the Degree Examination Results Form by the semester in which the limit of study period has reached or have not submitted the hardcopy of dissertation by the last working day before the day of class start of the following semester are required to drop out of NYCU.

This Article applies retroactively to students enrolled in the Institute.

- 十、學位論文(含摘要)以中文或英文撰寫為原則，並須符合本校學位論文格式規範。

學位考試通過後應將論文摘要及全文電子檔上網建檔(依照本校圖書館學位論文摘要及全文電子檔建檔規範辦理)，並繳交論文三冊(平裝一冊本所收藏，精裝一冊本校圖書館陳列，平裝一冊由國家圖書館收藏)。

10. Degree dissertations (including abstracts) must be written in Chinese or English and must conform to the degree dissertation format of NYCU. After passing the degree examination, students are required to upload the electronic file of the dissertation abstract and full-text article to the Internet (in accordance with the Regulations for Archiving Electronic Files of Degree Thesis/Dissertation Abstracts and Full-text Articles in National Yang Ming Chiao Tung University Libraries), together with three additional hardcopies submitted (a copy in softcover each for collection at the Institute and at the National Central Library, and a copy in hardback for display in NYCU library).

第六條 本修業規章乃依據本校研究生學位授予作業規章第二條，各研究生修業規章經所務

會議、學院課程委員會及校級課程委員會通過後實施，修正時亦同。

Article 6 The Regulations are formulated based on Article 2 of the Regulations for Master and Doctoral Degrees Conferment of NYCU. The academic regulations for master's and doctoral students will be implemented after being reviewed and approved by the Institute Affairs Faculty Meeting, both Curriculum Committees of the College and NYCU; **the same shall be done upon any amendment thereto.**