

# 國立東華大學材料科學與工程學系博士班修業要點

## Materials Science and Engineering, National Dong Hwa University Degree Requirements for the PhD Program

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95.01.17	94 學年度第 1 學期第 5 次系務會議修訂
97.09.25	97 學年度第 1 學期第 1 次教務會議通過
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106.05.31	105 學年度第 2 學期第 2 次教務會議通過

### 一、 法源依據：

本要點依據本校學則、博士班、碩士班研究生學位授予辦法及相關法規訂定。

#### I. Legal foundation

These requirements have been formulated in accordance with NDHU - Academic Regulations, the guidelines for the award of degrees for PhD and Master programs and other relevant laws and regulations.

### 二、 入學資格：

(一) 凡在公立或已立案之私立大學或獨立學院，或是經教育部認可之國外大學研究所主修材料或其他相關學科獲有碩士學位，經本校博士班研究所招生考試錄取者（含甄試），得進入本系博士班修讀博士學位。

(二) 外國學生得依本校「外國學生入學辦法」之規定申請入學。

(三) 學生符合本校「學生逕修讀博士學位作業規定」規定者，得逕修讀博士學位。

#### II. Admission requirements

i. Applicants with a Master's degree in Materials Science (major) from a public or accredited private university or independent academy or a foreign university which has been approved by the Ministry of Education or students in their graduation year or with equivalent academic qualifications will be admitted to the PhD program of the department after passing the entrance exam for the programs (including a screening test).

ii. Applications submitted by foreign students are handled in accordance with the regulations stated in Admission Guidelines for Foreign Students.

iii. Students meet the criteria of the NDHU Guidelines for direct admission to PhD Programs and may directly enroll in those programs.

三、 修業年限：

二至七年為限，但在職研究生，得延長其修業年限二年。

III. Program length

2 to 7 years, the maximum program duration may be extended by 2 years for part-time graduate students.

四、 修課及學分抵免規定：

(一) 詳如本系博士班課程規劃表。

(二) 本校博士生均須完成「學術研究倫理教育課程」並達及格標準，或提出「學術研究倫理教育」相關課程之修課通過證明（須經系所認定抵免）。出示修課證明始得申請學位考試；未完成本課程者，不得申請學位考試。

IV. Program requirements

i. Based on the curriculum plans for PhD programs of the department.

ii. The PhD students have to complete "academic research ethics education" course and pass the requirement, or file "academic research ethics education" related-courses that you have earned the course-credits already (The admission of course-credit is determined by department committee). Only showing the proof that you have earned the credit, you are eligible to apply for master-degree examination. If you unfinished the course, you are not eligible to apply for the master-degree examination.

五、 關於指導教授之規定

(一) 指導教授必須為本系助理教授（含）以上之專任教師擔任。若有特殊原因，得經系務會議通過，選非本系之專任教師為共同指導教授。

(二) 指導教授之選定須於入學後一年內完成，並繳交指導教授同意書。

(三) 變更指導教授需經原指導教授、新指導教授及系主任之書面同意。

V. Regulations regarding thesis supervisors

i. Thesis supervisors have to be selected from the full-time faculty of the department and have to be at least assistant professors. Under special circumstances, joint supervising professors may be selected from the full-time faculty of other departments upon approval by the Department Affairs Committee.

ii. Thesis supervisors have to be selected within one year after enrolment and letters of consent by the professors have to be submitted.

iii. If thesis supervisors have to be replaced, written permission has to be obtained from the original supervisor, the new supervising professor, and the department dean.

六、 博士學位之取得

分資格考試、博士論文研究計劃審核、期刊發表及博士學位考試四個階段。

## VI. Award of PhD degrees

Divided into the following four stages: Qualification exam, thesis proposal review, publication in a journal, and degree exam.

### 七、資格考試：

- (一) 本修業要點自九十一學年度入學後之博士生適用之。
- (二) 博士班資格考試科目區分為核心科目及選考科目兩大類（如第(三)條所列）。若該生曾於本系修習之相關研究所課程成績為前 1/2(含)或該科最高分，得免除該科目之資格考試。博士班資格考試，於每年 6 月份接受考試申請，在當年 9 月份舉行，每科均以 70 分為及格，滿分為 100 分，必須全部及格才算通過。不及格的類科可於次年再申請參加資格考試，但是以兩次為限，若同一類科兩次考試均未通過，即予退學。
- (三) 博士班資格考試科目如下所列：  
核心科目：  
高等物理冶金、高等熱動力學(2 選 1)  
選考科目(1~6 項中選 2 項)：
  1. 材料結構與顯微分析、穿透式電子顯微鏡學(含實用解析式電子顯微鏡)(2 選 1)
  2. 薄膜科學、技術或真空、電漿科技或表面科學與工程(3 選 1)
  3. 材料破壞學、高等材料機械性質(2 選 1)
  4. 電子陶瓷、精密陶瓷(2 選 1)
  5. 半導體元件、半導體材料、材料物理(3 選 1)
  6. 金屬材料特論、相變態(2 選 1)
- (四) 博士班資格考試應於入學後的三年內完成，否則應予退學。

## VII. Qualification exam

- i. These degree requirements apply to doctoral students who enrolled in the program in the Academic Year 2002/2003 or later.
- ii. The two subject categories for the qualification exam are “core subjects” and “exam subjects” (as listed in Point “c”). Students who have already completed relevant graduate-level courses and have achieved scores in the top 50% or higher will be exempted from the degree exam for that subject. Application for the degree exam may be submitted in June. Exams are administered in September. The full score and passing grade for each subject are 100 and 70 respectively. Students are required to pass all subjects. If students fail certain subjects, they may retake the exam for those subjects in the following year. If students fail the same subject twice, they will be expelled.
- iii. The following subjects can be selected for the PhD qualification exam:  
Core subjects: (choose one of two)

(A) “Advanced Physical Metallurgy”

(B) “Advanced Thermodynamics and Kinetics”

Exam subjects (select two out of the following 6 content areas):

(A) “Structure and Microstructure Analysis of Materials” or “Transmission Electron Microscopy” (including “Practical Analytical Electron Microscopy”)

(B) “Thin Film Science and Technology” or “Vacuum and Plasma Science and Technology” or “Surface Science and Engineering”

(C) “Material Fracture Mechanics” or “Advanced Mechanical Properties of Materials”

(D) “Electronic ceramics” or “Fine Ceramics”

(E) “Semiconductor Devices” or “Semiconductor Materials” or “Physics of materials”

(F) “Special Topics on Metallic Materials” or “Phase Transformation”

iv. The qualification exam has to be completed within three years after enrolment. Failure to do so will result in expulsion.

#### 八、 博士論文研究計畫審核

- (一) 博士班研究生論文研究計畫審查委員必須為助理教授(含) 以上或具有類似研究職務且具博士學位之人員擔任。
- (二) 博士班研究生論文研究計畫審查委員由該生之指導教授就符合資格之人員推薦五人(含) 以上之參考名單，經系主任聘請組成之。其中校外委員不得少於五分之二，指導教授(含共同指導教授) 為當然委員。論文研究計畫審查委員會負責審查該生論文計畫有關事宜，其召集人以非本系委員擔任為原則，惟指導教授不得擔任召集人。
- (三) 博士班研究生在博士學位考試舉行至少六個月之前，必須先通過研究計畫審核。論文研究計畫口試需經研究計畫審查委員四分之三以上通過(成績達七十分以上)，始為通過。口試通過後即為博士學位候選人。
- (四) 博士班入學後六年之內(不含休學期間) 必須通過博士論文研究計畫審核。若審核未能通過，得於三個月之後，再提出申請舉行，惟以兩次為限。若無法在規定期限及次數內通過者，應即退學。
- (五) 若變更論文指導教授，需於核准後依規定重新組成論文研究計畫審查委員會，並重新辦理研究計畫審查及口試。

#### VIII. Thesis proposal review

- i. The thesis proposal review committee has to be composed of PhD degree holders who are engaged in scholarly research and hold at least the rank of assistant professor.
- ii. The supervising professor submits a reference list of at least five recommended candidates who meet the required qualifications for the thesis proposal review committee. The department dean then appoints the committee members. External examiners have to make up at least 40% of the committee membership. The thesis

supervisor (including joint supervisors) is a mandatory member. The committee reviews the thesis proposal of said student. The thesis supervisor may not serve as the convener who should not be a member of this department.

- iii. Doctoral students have to pass their thesis proposal reviews at least 6 months before the degree exam. In order to pass the thesis proposal oral exam, students have to receive passing grades (a score of 70 or above) from at least 75% of the committee members. Students acquire PhD candidate status after passing the oral exam.
- iv. Doctoral students have to pass the thesis proposal review within 6 years after enrolment (suspension periods not included). If students fail their reviews, they may reapply after three months. Students who fail their reviews twice or are unable to complete the required procedures within the specified deadline will be expelled.
- v. In case of replacement of supervising professors, a new thesis proposal review committee has to be formed upon approval in accordance with relevant regulations and students have to reapply for the thesis proposal review and oral exam.

## 九、 論文發表

- (一) 博士班研究生所發表之論文，必須是該生在本系博士班就讀期間之研究成果，並以本系全銜刊登。
  - (二) 申請博士學位考試其研究成果必須在國際期刊發表或被接受，依計點標準規定，畢業要求之總點數必須超過 6 點（含）以上，其中至少含一篇署名為第一作者且是以東華大學名義發表的 A 級 SCI 論文。
  - (三) 計點標準
    1. 期刊分類依照本所教師升等時之期刊分類。
    2. SCI 列名之 A 級期刊的 full paper 3 點, communication letter 及 short note 1 點。
    3. SCI 列名之 B 級期刊的 full paper 2 點, communication、letter 及 short note 1 點。
    4. 發明專利，0.5 點，新型專利，0.5 點。
    5. 國際會議論文，0.2 點；國內會議論文，0.1 點。
    6. 國內期刊：指材料科學與中國工程學刊二種，0.5 點。
    7. 國際 proceeding、論文或專利內容重覆者，擇一較高點數計算。
    8. 4~7 總計不得超過 1 點。
    9. 論文或專利作者，指導教授除外，第一位作者以全點計算，第二位以全點之 1/2，第三位以全點之 1/4，依此類推。
- 【註】期刊分類標準，依本系教師升等辦法中之規定辦理。

## IX. Thesis publication

- i. The thesis published by PhD candidates has to be the result of the student's research

while being enrolled in the PhD program at this department and has to be published with the full name of the department.

- ii. Before the student is eligible to apply for the degree exam, his/her thesis has to be published or accepted by an international journal. The student also has to accumulate a total of at least 6 points to qualify for graduation. One of the published articles has to appear in a class-A SCI journal with the student as the first author and published in the name of the university.
- iii. Point award criteria
  - (A) Journal categories are identical to those used for promotion evaluations of the department.
  - (B) Three points are awarded for a full paper and one point is awarded for a communication letter or short note in a publication which is listed as an A-class journal in the SCI.
  - (C) Two points are awarded for a full paper and one point is awarded for a communication letter or short note in a publication which is listed as a B-class journal in the SCI.
  - (D) 0.5 points are awarded for invention and utility patents.
  - (E) 0.2 points and 0.1 points are awarded for international conference papers and national conference papers, respectively.
  - (F) 0.5 points are awarded for articles published in national journals such as Materials Science and the Journal of the Chinese Institute of Engineers.
  - (G) If papers, articles, or patents are published more than once, points will be awarded according to the highest criteria.
  - (H) The total for items 4-7 may not exceed 1 point.
  - (I) The first author of an article or patent will be awarded the full number of points, while the second and third author will be awarded 50% and 25% of the available points and so on.

[Note] Journal categories are based on the regulations stated in the Department Guidelines for Faculty Promotions.

## 十、 博士學位考試

- (一) 博士學位論文(含摘要)須符合國立東華大學學位論文格式規範。學位考試通過後應將論文摘要及全文電子檔上網建檔(依照國立東華大學圖書館學位論文摘要及全文電子檔建檔規範辦理),並繳交論文四冊(一冊系收藏,三冊本校圖書館陳列及彙轉教育部指定之度藏單位收藏)。
- (二) 博士學位考試委員會置委員五至九人,校外委員至少佔三分之一以上,委員需具備下列資格之一者,由系主任提請校長遴聘之。博士班研究生之配偶或



三親等內血親或姻親，不得擔任其博士學位考試委員。

1. 曾任教授者。
2. 擔任中央研究院院士或曾任中央研究院研究員者。
3. 曾任副教授或擔任中央研究院副研究員，在學術上有成就者。
4. 獲有博士學位，在學術上有成就者。
5. 屬於稀少性或特殊性學科，在學術或專業上有成就者。

前項第二款至第五款之提聘資格認定標準，由本系教師評議委員會審核之。

(三) 學位考試以口試行之，並應依下列規定辦理：

1. 口試以公開舉行為原則，須於事前公佈口試時間、地點及論文題目並安排大型場所容納聽眾。
2. 學位考試委員應親自出席學位口試，不得委託他人為代表，博士學位考試委員會至少應有委員五人出席，出席委員中需有校外委員三分之一以上時始得舉行。
3. 學位考試委員會由委員互推一人為召集人；但指導教授不得擔任召集人。
4. 學位考試成績，以七十 (B-) 分為及格，一百分 (A+) 為滿分，評定以一次為限，並以出席委員評定分數平均決定之，有三分之一以上出席委員評定不及格者，以不及格論。
5. 論文有抄襲或舞弊情事，經學位考試委員會審查確定者，以不及格論，並送本校學生獎懲委員會議處。
6. 學位考試成績不及格，而其修業年限尚未屆滿者，得於次學期或次學年重考，重考以一次為限；重考成績仍不及格者，應令退學。
7. 已申請學位考試之研究生，若因故無法於該學期內完成學位考試，應於學校行事曆規定學期結束日之前報請學校撤銷該學期學位考試之申請。逾期未撤銷者，以一次不及格論。

(四) 學位考試成績不及格，而其修業年限尚未屆滿者，得於次學期或次學年重考，重考以一次為限；重考成績仍不及格者，應令退學。

(五)

## X. Degree exam

- i. The PhD thesis (including the abstract) has to conform to the NDHU format guidelines for academic theses. Upon successful completion of the degree exam, the thesis abstract and the complete digital file have to be uploaded and archived in accordance with the relevant library guidelines. The student also has to submit four copies of the thesis (one copy will be stored in the department, the second copy will be displayed in the library, while the final two copies are forwarded and stored in archives designated by the Ministry of Education)
- ii. The PhD degree exam committee consists of 5 to 9 members. External examiners have to make up at least 1/3 of the committee membership. Committee members have to

meet one of the criteria stated below and are appointed by the President on request of the Department Dean. Spouses, third-, second-, and first-degree blood relatives, and relatives by marriage are not eligible to serve as exam committee members.

- (A) Previous tenure as professor
- (B) Tenure as an Academician at Academia Sinica or previous appointment as a research fellow
- (C) Previous tenure as associate professor or appointment as an associate research fellow at Academia Sinica with outstanding academic achievements
- (D) PhD degree holders with outstanding academic achievements
- (E) Representatives of rare or unique fields of study with outstanding academic or professional achievements

The qualification criteria for appointment based on items 2 to 5 are determined by the Faculty Evaluation Committee of the department.

iii. The degree exam is administered as an oral exam in accordance with the following regulations:

- (A) The oral exam is a public event. The exam time, location, and thesis topic have to be announced in advance and the exam is held in a venue with a large capacity.
- (B) The degree exam committee members are required to personally attend the oral exam and may not commission others to serve as substitutes. A minimum of five committee members have to be present during the exam. External examiners have to make up at least 1/3 of the attending committee members.
- (C) One of the committee members other than the supervising professor serves as convener.
- (D) The passing grade for the degree exam is 70 (B-), while the full score is 100 (A+). Scores are only assessed once and the final score is the average of the scores awarded by each attending committee member. If students receive non-passing grades from at least 1/3 of the attending committee members, the exam is considered failed.
- (E) If plagiarism or fraud is detected in the thesis by the degree exam committee, the exam is considered failed and the student will be penalized by the NDHU Student Disciplinary Committee.
- (F) Students who have failed their degree exams and haven't reached the maximum program duration may retake the exam in the next semester or academic year. Students who fail their exam a second time will be expelled.
- (G) Students who have already submitted an application for their degree exam and are unable to attend the exam in the respective semester for certain reasons should petition the university to withdraw their applications before the end of the semester as specified in the event calendar. If students fail to withdraw their



applications, the exam is considered failed.

- iv. Students who have failed their degree exams and haven't reached the maximum program duration may retake the exam in the next semester or academic year. Students who fail their exam a second time will be expelled.

十一、本校對已授予之博士學位，如發現論文有抄襲或舞弊情事，經調查屬實者，則撤銷其學位，追繳其已發之學位證書。

XI. If it is discovered that students who have been awarded PhD degrees have committed plagiarism or fraud in the composition of their thesis, their degree will be revoked and already handed out diplomas have to be returned upon verification of fraud allegations.

十二、本要點如有未盡事宜，依教育部有關法令及本校學則、規章辦理。

XII. Matters not specified in these guidelines are handled in accordance with relevant Ministry of Education decrees and university regulations and rules.

十三、本要點經系務會議通過後公告實施，並報教務會議備查，修正時亦同。

XIII. These guidelines and all amendments are subject to ratification by the Department Affairs Committee before they are made public and implemented and have to be reported to the Academic Affairs Committee for future reference.