

National Taiwan Normal University
Department of Computer Science and Information Engineering
Doctoral Program Regulations

(Effective 2021 Academic Year for Newly Enrolled Students)

Amended and Approved at the 2nd Spring Semester Departmental Affairs Meeting of the 2016 Academic Year on June 13th, 2017
Approved at the 1st Fall Semester Departmental Affairs Meeting of the 2019 Academic Year on October 4th, 2019
Approved at the 3rd Fall Semester Developmental Committee Meeting of the 2019 Academic Year on January 10th, 2020
Amended and Approved at the 2nd Fall Semester Departmental Affairs Meeting of the 2019 Academic Year on January 13th, 2020
Amended and Approved at the 3rd Fall Semester Departmental Affairs Meeting of the 2019 Academic Year on March 31th, 2020
Amended and Approved at the 2nd Curriculum Committee of the College of Science in the 2019 Academic Year on March 19th, 2020
Approved at the 2nd Academic Affairs Meeting of the 2019 Academic Year on April 22th, 2020

- I. The current regulations are drafted pursuant to the National Taiwan Normal University (hereinafter referred to as NTNU) School Regulations and Degree Conferral and Graduate Degree Exam Regulations.
- II. The degree conferred by the Department of Computer Science and Information Engineering (hereinafter referred to as DCSIE) Doctoral Program is Doctor of Philosophy (Ph.D.).
- III. Program Regulations
 - A. Doctoral students are required to complete their studies in no less than 2 and no more than 7 years.
 - B. At a minimum, doctoral students must complete 18 credits of DCSIE doctoral courses. However, master's students who are directly admitted to a doctoral program must complete at least 30 credits of DCSIE graduate level courses (including 18 credits of doctoral courses). The aforementioned credits do not include "seminars" (For details on the different concentration tracks of the doctoral curriculum, please see appendix).
 - C. Elective courses:
 1. Seminars: Four out of six, 4 credits in total. In principle, students may take a maximum of one credit per semester.
 - a) Seminar on Communication Networks (I, II)
 - b) Seminar on Information Systems (I, II)
 - c) Seminar on Multimedia Engineering (I, II)
 2. Free electives: At least 18 credits are required.
 - D. Prerequisites
 1. DCSIE doctoral students are required to have taken and successfully passed at least three of the following six courses in their undergraduate or master's coursework:
 - a) Operating Systems (or Advanced Operating Systems)
 - b) Computer Architecture (or Advanced Computer Architecture)
 - c) Algorithms (or Advanced Algorithms)
 - d) Automata Theory and Formal Languages
 - e) Linear Algebra
 - f) Discrete Mathematics

2. Grades of the aforementioned courses must be at least 75 or above to be considered as passed. Those who failed must retake the aforementioned courses at DCSIE and successfully pass them before graduation. Credits of courses retaken at DCSIE can be counted towards the 18 doctoral level credits of Article III Paragraph B if such courses were DCSIE doctoral courses.
3. Courses with titles that are different from the ones listed above must be approved by the DCSIE Curriculum Committee before such credits may be accepted.

E. Credit Waiver

1. Students may apply for credit waivers with credits they earned in their master's program if the student can provide evidence showing that the credits have not been used to satisfy the requirements of a degree they have previously earned.
2. The maximum number of credits waived may not exceed two-thirds of the approved number of credits needed for graduation.
3. Granting of credit waivers shall be decided by the DCSIE Curriculum Committee.

F. Non-NTNU credits earned after admission to NTNU may be transferred at the discretion of and calculated in ways deemed appropriate by the DCSIE Curriculum Committee.

IV. Student's foreign language proficiency must satisfy at least one of the following:

- A. An NTNU Lexile Framework for Reading score of 850 or above.
- B. Successfully passing the General English Proficiency Test (GEPT) at the High Intermediate - Listening and Reading Level.
- C. Earning a TOEIC certificate with a score of 750 or above.
- D. Earning a new Internet-based TOEFL certificate with a score of 78 or above.
- E. Waiver of foreign language proficiency shall be granted in accordance with DCSIE Doctoral Program foreign language proficiency waiver regulations.

V. Qualifying Exam

- A. The qualifying exam is based on a journal paper publication point system. The paper publication points must be at least 4 to pass the qualifying exam. There is no limit to the number of trials for students who failed their qualifying exams.
- B. The Qualifying Exam Committee consists of the department chair and three DCSIE full-time faculty members recruited by the department chair. The committee shall review the application in accordance with the Publication Point Calculation Regulations.
- C. The Publication Point Calculation Regulations shall be promulgated separately.
- D. Doctoral students shall be considered as Doctoral Candidates once they have passed the "Qualifying Exam".

VI. Dissertation Advisor

- A. Only full-time DCSIE faculty members at the Associate Professor level or above (or those who qualify as exam committee member in accordance with Article VIII Paragraph A Subparagraph 4) may serve as dissertation advisors of doctoral students. The student may also request

for a co-advisor. In certain unique circumstances, non-DCSIE faculty members may also serve as a dissertation advisor with the permission of the Curriculum Committee, provided a DCSIE full-time faculty member is also serving as the co-advisor.

- B. Doctoral students should confirm their dissertation advisor within the first semester of their program and submit the “Dissertation Advisor Confirmation” form to the DCSIE Office (If an advisor was not confirmed in time, the Graduate Student Counselor shall be appointed as their temporary advisor).
- C. Permissions from both the current and new advisors are required for any replacement of advisors. The “Dissertation Advisor Change” form should be submitted to the DCSIE Office.

VII. Dissertation Proposal Oral Defense

- A. Doctoral students must provide proof of passing the qualifying exam, information on courses completed, and proof of successful completion of NTNU “Academic Research Ethics Training” to receive approval from the department chair to qualify for the Dissertation Proposal Oral Defense.
- B. A student’s Doctoral Dissertation Proposal Examination Committee shall consist of 3 to 5 members, including the dissertation advisor and faculty members recommended by the dissertation advisor who are qualified to serve as doctoral degree exam committee members. DCSIE shall formally invite these members to form the committee with the dissertation advisor serving as the ex-officio member. The Dissertation Proposal Examination Committee shall be responsible for the review of the student's dissertation.
- C. “Dissertation Proposal Oral Defense” must be approved by at least three quarters of the members of the Dissertation Proposal Examination Committee (with a grade of at least B- or 70%) to be considered as having passed the exam. Failed students may reapply for a new oral exam three months after their previous oral defense.

VIII. Dissertation Defense

- A. Doctoral students must pass the “Dissertation Proposal Oral Defense” at least 6 months before their “Dissertation Defense”. The “Dissertation Defense” will be conducted orally, with a grade of B- (or 70%) or above considered as passing. The grade will be the average of the scores given by the attending committee members. The exam may be conducted via video conferencing with the approval of the department, and must be recorded in its entirety.
- B. Doctoral candidates requesting for the “Dissertation Defense” must provide the following documentation to the department chair for approval before they may proceed further. The documentation required includes:
 - 1. Transcript that includes all courses completed or relevant evidence.
 - 2. A copy of the first draft of the dissertation and its abstract (The dissertation, including the abstract, should be written in Chinese or English).
 - 3. Academic papers that have been accepted for publication by academic journals. The candidate must be the first author (excluding the dissertation advisor or co-advisor. However, only one advisor may be excluded at a time) of at least one of the published papers. The papers must be published with the full name of the department in journals that have been listed in SCI, SSCI, or

EI. Papers previously used in the qualifying exam point calculation may not be included.

4. An originality report provided by online plagiarism check systems.
 5. A copy of the "Declaration of Originality"
- C. The Dissertation Committee shall consist of 5 to 7 members appointed by the department chair from a member candidate list of at least 8 or more candidates provided by the dissertation advisor, who shall also be included in the list. Among the members, at least one third of the members must be non-NTNU faculty. In principle, the committee chair shall be a non-NTNU member; the dissertation advisor may not serve as the committee chair.
- D. To serve as a committee member, the committee member must have specialized in the research field of the doctoral candidate, and satisfies at least one of the following criteria:
1. Being a current or former professor or associate professor
 2. Being an academician of Academia Sinica, a current or former research fellow or associate research fellow
 3. Having received a doctoral degree and had attained substantial achievement academically
 4. Being in a field that is uncommon or unique, and had attained substantial achievement academically or professionally

The determination of Subparagraphs 3 and 4 of the current paragraph shall be at the sole discretion of the dissertation advisor. Proposed committee member candidates shall be invited to serve after approval by the dissertation advisor and the department chair.

- E. The announcement of oral defense date: The student should make the announcement (post posters) at least 3 days before the date of the oral defense.

IX. Other

- A. Other matters not covered herein should refer to the NTNU Student Regulations and other relevant regulations.
- B. Once approved by the DCSIE Departmental Affairs Meeting, the current Regulations shall be submitted to the relevant meetings of the college and the Academic Affairs Meeting. The same will apply to all of its subsequent amendments.

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Concentrations of the Doctoral Program

Suggested Curriculum:

Total Number of Credits: 22

Curriculum:

I. Electives (4+18):

1. Seminars (4): Seminar on Communication Networks (I, II), Seminar on Information Systems (I, II), Seminar on Multimedia Engineering (I, II)
2. Free electives at the master's and doctoral levels (18): 6 courses

II. Doctoral Course Plan:

	通訊網路 Communication Networks	資訊系統 Information Systems	多媒體工程 Multimedia Engineering
選修 (六選四) Electives (4 out of 6)	專題討論：通訊網路 (一、二) Seminar on Communication Networks (I) (II)	專題討論：資訊系統 (一、二) Seminar on Information Systems (I) (II)	專題討論：多媒體工程 (一、二) Seminar on Multimedia Engineering (I) (II)
選修 (每年必開) Electives (offered every year)	1. 高等計算機網路 Advanced Computer Networks 2. 分散式處理系統 Distributed Processing Systems 3. 排隊理論 Queueing Theory	1. 高等作業系統 Advanced Operating Systems 2. 高等演算法 Advanced Algorithms 3. 高等計算機結構 Advanced Computer Architectures	1. 高等影像處理 Advanced Image Processing 2. 高等計算機圖學 Advanced Computer Graphics 3. 機器學習 Machine Learning
自由選修 (不定期開)	電腦視覺 (碩博) Computer Vision (Master's/Doctoral) 模糊理論 (碩博) Fuzzy Theory (Master's/Doctoral)		

<p>Free Electives (Offered aperiodically)</p>	<p>圖形辨認 (碩博) Pattern Recognition (Master's/Doctoral) 類神經網路 (碩博) Artificial Neural Networks (Master's/Doctoral) 資訊系統專論 (一) Special Topic: Information Systems (I) 平行演算法 (碩博) Parallel Algorithms (Master's/Doctoral) 計算理論 (碩博) Theory of Computation (Master's/Doctoral) 語音辨識 (碩博) Speech Recognition (Master's/Doctoral) 隨機程序 (碩博) Stochastic Processes (Master's/Doctoral) 資訊檢索與擷取 (碩博) Information Retrieval and Extraction (Master's/Doctoral) 通訊網路專論 (一) Special Topic: Communication Networks 高等資料庫系統 (碩博) Advanced Database Systems (Master's/Doctoral) 嵌入式系統設計 (碩博) Embedded System Design (Master's/Doctoral) 資料壓縮 (碩博) Data Compression (Master's/Doctoral) 數位訊號處理 (碩博) Digital Signal Processing (Master's/Doctoral) 多媒體工程專論 (一) Multimedia Special Topic (I) 容錯計算 (碩博) Fault-Tolerant Computing (Master's/Doctoral) 生物資訊 (碩博) Bioinformatics (Master's/Doctoral) 機器學習 (碩博) Machine Learning (Master's/Doctoral) 自然語言處理 (碩博) Natural Language Processing (Master's/Doctoral) 多媒體系統設計 (碩博) Multimedia System Design (Master's/Doctoral) 演算法的數學解析 (碩博) Concrete Mathematics (Master's/Doctoral)</p>
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