National Chung Hsing University, College of Engineering,

Department of Mechanical Engineering

Implementation Regulations for Doctoral Candidacy Evaluation

Approved by the Department Affairs Meeting on November 24, 2004

Approved by the Department Affairs Meeting on March 15, 2005; September 8, 2005

Amended by Approved by the Department Affairs Meeting on April 25, 2007 (Article 5)

Amended by the Department Affairs Meeting on January 9, 2008 (Annex)

Amended by the Department Affairs Meeting on June 9, 2010; July 5, 2017; March 2, 2020 (Article 3)

Amended by the Department Affairs Meeting on October 26, 2022 (Article 3)

1. These regulations are formulated in accordance with the "NCHU Guidelines for Doctoral Candidacy Evaluation."
2. After accepting applications from doctoral students for the doctoral candidacy evaluation, the Department shall organize a "Doctoral Candidacy Evaluation Committee" responsible for assessing the student. The committee shall consist of at least five members, who should have qualifications equivalent to at least an assistant professor, be experts in disciplines related to the student's research topic, or have outstanding academic achievements relevant to the student’s research. If necessary, external committee members may be invited. The advisor shall be an ex officio member of the committee. The list of committee members shall be approved by the department chair and submitted to the Office of Academic Affairs for processing. The same procedure applies if there are changes to the committee membership.
3. The doctoral candidacy evaluation in the department consists of two parts: the qualification examination and the oral examination of the dissertation proposal.

1. Qualification Examination

The qualification examination is based on both written examinations and course credits, with a total of four points required to pass (for master’s students in this department within five years, accumulating two points is the passing standard).

* 1. Written Examination: Conducted once per semester after the start of classes. Doctoral students may select two subjects from the department’s designated courses with the consent of their advisor. Each written examination score of 60 or above (inclusive) earns two points; scores between 50 and 59 (inclusive) earn one point. Students may take the written examination up to three times, and a maximum of two subjects will be counted towards the total points; only the highest score will be counted for the same subject.
  2. Course Credits: The Academic Committee will determine the core subjects required for the Ph.D. program and the foundational required courses for undergraduate students. Students who pass the core subjects with a score meeting the passing standard and rank within the top 50% of the class will earn one point. Students who complete foundational required undergraduate courses in the Department or other mechanical engineering-related departments within the Taiwan Comprehensive University System (T4) within ten years prior to admission or five years after admission, with scores of 70 or above (inclusive) or ranking within the top 50% of the class, and have been approved by the Academic Committee, may earn one point for each approved course. A maximum of four courses can be counted under the course credit method.

2. Dissertation Oral Examination

* 1. After passing the qualification examination, doctoral students must submit a dissertation proposal to apply for the dissertation oral examination.
  2. The dissertation oral examination will be conducted by the evaluation committee regarding the proposed doctoral dissertation research plan and related fields of the primary research group. A minimum of two-thirds of the committee members must approve the examination result to be considered qualified.
  3. The dissertation oral examination is limited to once per semester; those who do not pass may not apply for the degree examination. If students fail the re-examination, they will be dismissed from the program.

3. Doctoral students in the department must meet the following conditions to be officially recognized as Ph.D. candidates:

* 1. Complete the required courses for the Ph.D. degree and earn the required credits.
  2. Pass all assessments as stipulated in Section III 1 and 2.

1. Any matters not covered by these regulations shall be handled by relevant laws and regulations.
2. These regulations shall be implemented after approval by the Department Affairs Meeting. The same procedure applies to any amendments.

**National Chung Hsing University, Department of Mechanical Engineering**

**Application Form for Doctoral Candidacy Evaluation for Doctoral Students**

Name: Student ID:

Academic Year: Semester: □Fall Semester □Spring Semester

**Record of Passing:**

□Passed Written Examination Subjects

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□Passed Course Subjects

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**Selection Method: □ Written Examination □ Course (Multiple choices allowed)**

□Written Examination Subjects

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□Course Subjects (The core subjects of the Ph.D. program and the foundational required courses for undergraduate studies are determined by the Academic Committee)

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Advisor： Applicant： 　 　Date:

Department of Mechanical Engineering, National Chung Hsing University

**Qualification Examination Passing Form for Ph.D. Candidacy Evaluation**

**(to be submitted when applying for the Dissertation oral defense)**

Name: Student ID: Year: Semester: □Fall Semester □Spring Semester

Record of Passing Qualification Examination (The total below must exceed four points):

□A. Passed Written Examination Subjects (One subject can earn one to two points)

1. 2.

□B. Passed Course Subjects (One subject can earn one point)

1. 2.

3. 4.

**※Please attach relevant supporting documents for the above.**

**Total Points:(A)+(B)＝　　　　　≧ 4**

According to the department's "Regulations for Ph.D. Graduate Students," before taking the Ph.D. degree examination, candidates must have published (or have been accepted in) at least two papers in academic journals that are indexed by SCI or EI, one of which must be a full paper published in an international SCI journal with the candidate as the first author.

A Ph.D. candidate may apply for the Ph.D. degree examination upon the recommendation of their advisor. After the Ph.D. Degree Examination Committee approves the dissertation, the university will award the Ph.D. degree.

Note: The papers must be research results obtained during the Ph.D. program. At least one of the papers must have the candidate as the first author, and the second paper must have the candidate as either the first or second author. If the candidate is the second author, the first author must be the primary advisor.

List the two accepted journal papers below:

1. .
2. .

Advisor： Applicant： 　 　Date:

**Attachment 1**

**National Chung Hsing University, College of Engineering  
Department of Mechanical Engineering,   
The Subject Names for the Ph.D. Candidacy Evaluation**

Subjects Available for Selection in Each Field：

* + 1. **Solid Mechanics and Design Group:**

1. Machine Design (focusing on the selection and design of mechanical components)
2. Mechanisms
3. Mechanics of Materials
4. Dynamics
5. Engineering Mathematics (including Ordinary Differential Equations, Laplace Transform, Fourier Analysis, Matrix Analysis, Complex Functions, Partial Differential Equations, and Vector Analysis)
   * 1. **Energy and Thermal Fluid Group:**
6. Fluid Mechanics (focused on undergraduate-level courses)
7. Heat Transfer (focused on undergraduate-level courses)
8. Thermodynamics (focused on undergraduate-level courses)
9. Engineering Mathematics (including Ordinary Differential Equations, Laplace Transform, Fourier Analysis, Matrix Analysis, Complex Functions, Partial Differential Equations, and Vector Analysis)

* + 1. **System Control Group:**

1. Control Systems (focused on undergraduate-level courses)
2. Dynamics (focused on undergraduate-level courses)
3. Engineering Mathematics (including Ordinary Differential Equations, Laplace Transform, Fourier Analysis, Matrix Analysis, Complex Functions, Partial Differential Equations, and Vector Analysis)
   * 1. **Precision Manufacturing Group:**
4. Mechanical Manufacturing
5. Engineering Materials
6. Automation Engineering (including Manufacturing Automation, CAD/CAM, and Flexible Manufacturing Systems)
7. Engineering Mathematics (including Ordinary Differential Equations, Laplace Transform, Fourier Analysis, Matrix Analysis, Complex Functions, Partial Differential Equations, and Vector Analysis)
   * 1. **Micro-Nano Engineering Group:**
8. Electronic Circuit (focused on undergraduate-level courses)
9. General Physics (focused on undergraduate-level courses)
10. Engineering Mathematics (Including Ordinary Differential Equations, Laplace Transform, Fourier Analysis, Matrix Analysis, Complex Functions, Partial Differential Equations, and Vector Analysis)

**National Chung Hsing University**

**Department of Mechanical Engineering**

**Ph.D. Candidacy Evaluation Reference Books**

**for Solid Mechanics and Design Group**

**1. Mechanical Design (Focus on the selection and design of mechanical components)**

1. **Mechanical Engineering Design, 5th ed.**   
   Authors: Joseph Edward Shigley, C. Mischke  
   Publisher: McGRAW-HILL INC.
2. **Mechanical Design**  
   Author: Ansel C. Ugural  
   Publisher: McGRAW-HILL INC., 2004

**2. Mechanisms**

Undergraduate-level textbook on Mechanisms

**3. Mechanics of Materials**

Undergraduate-level textbook on mechanics of materials

**4. Dynamics**

Undergraduate-level textbook on Dynamics

**5. Engineering Mathematics (Including Ordinary Differential Equations, Laplace   
Transforms, Fourier Analysis, Matrix Analysis, Complex Functions, Partial Differential Equations, and Vector Analysis)**

1. **Advanced Engineering Mathematics**  
   Author: Erwin Kreyszig, 8th ed.
2. **Advanced Engineering Mathematics**  
   Authors: D.S. Zill & M.R. Cullen, 2nd ed.

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**National Chung Hsing University**

**Department of Mechanical Engineering**

**Ph.D. Candidacy Evaluation Reference Books for Energy and Thermal Fluid Group**

**1. Fluid Mechanics (Based on undergraduate-level courses)**

1. **Introduction to Fluid Mechanics, 6th Edition, 2006**  
   Authors: Fox, Macdonald, and Pritchard
2. **Fundamentals of Fluid Mechanics**  
   Authors: Munson, B., Young, D., and Okiishi, T.H.  
   Publisher: John Wiley & Sons

**2. Heat Transfer (Based on undergraduate-level courses)**

**Fundamentals of Heat and Mass Transfer, 6th Edition, 2007**  
Authors: F. P. Incropera, D. P. De Witt, T. L. Bergman, A. S. Lavine  
Publisher: Wiley

**3. Thermodynamics (Based on undergraduate-level courses)**

1. **Fundamentals of Classical Thermodynamics, 6th Edition, 2003**  
   Authors: Van Wylen, Sonntag, and Borgnakke  
   Publisher: John Wiley and Sons
2. **Fundamentals of Engineering Thermodynamics, 5th Edition, 2004**  
   Authors: M. J. Moran and H. N. Shapiro  
   Publisher: John Wiley & Sons, Inc.

**4. Engineering Mathematics (Including Ordinary Differential Equations, Laplace Transforms, Fourier Analysis, Matrix Analysis, Complex Functions, Partial Differential Equations, and Vector Analysis)**

1. **Advanced Engineering Mathematics**  
   Author: Erwin Kreyszig, 8th ed.
2. **Advanced Engineering Mathematics**  
   Authors: D.S. Zill & M.R. Cullen, 2nd ed.

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**National Chung Hsing University**

**Department of Mechanical Engineering**

**Ph.D. Candidacy Evaluation Reference Books for System Control Group**

**1. Control Systems (Based on undergraduate-level courses)**

1. **Control Systems - Principles & Design**  
   Author: M. Gopal  
   Publisher: McGraw-Hill
2. **Modern Control Systems**  
   Authors: Richard C. Dorf & Robert H. Bishop  
   Publisher: Prentice-Hall

**2. Dynamics (Based on undergraduate-level courses)**

**Principles of Dynamics**  
Author: D. T. Greenwood  
Publisher: Prentice-Hall

**3. Engineering Mathematics (Including Ordinary Differential Equations, Laplace Transforms, Fourier Analysis, Matrix Analysis, Complex Functions, Partial Differential Equations, and Vector Analysis)**

1. **Advanced Engineering Mathematics**  
   Author: Erwin Kreyszig, 8th ed.
2. **Advanced Engineering Mathematics**  
   Authors: D.S. Zill & M.R. Cullen, 2nd ed.

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**National Chung Hsing University**

**Department of Mechanical Engineering**

**Ph.D. Candidacy Evaluation Reference Books for Precision Manufacturing Group**

**1. Mechanical Manufacturing**

**Fundamentals of Modern Materials, Processes, and Systems Manufacturing, 3rd Edition, 2007**  
Author: M. P. Groover  
Publisher: Wiley

**2. Engineering Materials**

**Materials Science and Engineering – An Introduction, 6th Edition, 2003**  
Author: W. D. Callister  
Publisher: Wiley

**3. Automation Engineering (Including Manufacturing Automation, CAD/CAM, and Flexible Manufacturing Systems)**

**Automation, Production Systems, and Computer-Integrated Manufacturing, 3rd Edition, 2007**  
Author: M. P. Groover  
Publisher: Prentice-Hall

**4. Engineering Mathematics (Including Ordinary Differential Equations, Laplace Transforms, Fourier Analysis, Matrix Analysis, Complex Functions, Partial Differential Equations, and Vector Analysis)**

1. **Advanced Engineering Mathematics**  
   Author: Erwin Kreyszig, 8th ed.
2. **Advanced Engineering Mathematics**  
   Authors: D.S. Zill & M.R. Cullen, 2nd ed.

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**National Chung Hsing University**

**Department of Mechanical Engineering**

**Ph.D. Candidacy Evaluation Reference Books for Micro-Nano Engineering Group**

**1. Electronic Circuit (Based on undergraduate-level courses)**

1. **Electronic Devices and Circuit Theory, 9th Edition, 2006**

Author: Robert L. Boylestad and Louis Nashelsky  
Publisher: Prentice Hall

1. **Electric Circuits, 7th Edition, 2005**

Author: James W. Nilsson & Susan A. Riedel  
Publisher: Pearson Education International

**2. Physics (Based on undergraduate-level courses)**

1. **Fundamentals of Physics**

Author: David Halliday, Robert Resnick, and Jearl Walker

1. **College Physics, by**

Author: Raymond A. Serway and Jerry S. Faughn

**3. Engineering Mathematics (Including Ordinary Differential Equations, Laplace Transforms, Fourier Analysis, Matrix Analysis, Complex Functions, Partial Differential Equations, and Vector Analysis)**

1. **Advanced Engineering Mathematics**  
   Author: Erwin Kreyszig, 8th ed.
2. **Advanced Engineering Mathematics**  
   Authors: D.S. Zill & M.R. Cullen, 2nd ed.

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