# National Taiwan University
# Ph.D. Program in Nanoengineering and Nanoscience
# Degree Regulations

1. Study period: 2 to 7 years
2. Minimum graduation credits:
   - General student: 15 credits. Thesis, Special Topics, and Seminar are not included.
   - Direct admission to Ph.D. student: 27 credits. Thesis, Special Topics, and Seminar are not included.
3. At least 9 credits of professional electives are required from the program (courses are approved by an advisor)
4. Online learning of Academic Ethics is a required course, and does not count toward graduation credits.
5. The credits of undergraduate courses do not count toward the minimum credits for graduation requirements.
6. Those who enrolled in the 2022 academic year, 35% of English-taught courses should be registered for graduation requirements.
7. For any matters not covered, please refer to the regulations of Graduate School of Advanced Technology.

- **Required Curriculum**

| Required Course | Credit(s) | Note |
|---|---|---|
| Internship | 6 | 2 semesters |
| Seminar | 1 | 4 semesters |
| Special Project | 1 | every semester |
| Doctoral Dissertation | 0 | Semester of graduation |
| Academic Ethics | 0 | Students who fail the Academic Ethics are Not eligible to apply Defense |

- **Required Competency (choose one)**

| Level | Course Title | Credit(s) |
|---|---|---|
| Graduate | 近代物理<br>Modern Physics | 3 |
| Graduate | 量子力學(一)<br>Quantum Mechanics(I) | 3 |
| Graduate | 量子力學(二)<br>Quantum Mechanics(II) | 3 |

| | | |
|---|---|---|
| Graduate | 量子物理（上）<br>Quantum Physics (I) | 3 |
| Graduate | 奈米科技導論<br>Introduction to Nanotechnology | 3 |
| Graduate | 奈米科學與工程<br>Nanoscience and Nanotechnology | 3 |
| Graduate | 精細元件與精密系統<br>Precision Elements and Systems | 3 |

- **Elective Curriculum**

| Level | Course Title | Credit(s) |
|---|---|---|
| Graduate | 低維度半導體物理<br>Low-Dimensional Semiconductor Physics | 3 |
| Graduate | 材料化學<br>Materials Chemistry | 3 |
| Graduate | 高等材料力學<br>Advanced Strength of Materials | 3 |
| Graduate | 流體力學導論<br>Fundamental of Fluid Dynamics | 3 |
| Graduate | 光學量測系統原理設計<br>Design Principle of Optical Measurement System | 3 |
| Graduate | 精密量測<br>Precision Metrology | 3 |
| Graduate | 半導體智慧製造系統概論<br>Introduction to Semiconductor Intelligent Manufacturing Systems | 3 |
| Graduate | 壓電系統設計與製造<br>The Design & Construction of Piezoelectric Systems | 3 |
| Graduate | 壓電振動能量擷取導論<br>Introduction to Piezoelectric Energy Harvesting | 3 |
| Graduate | 微感測器特論<br>Special Topics on Microsensors | 3 |
| Graduate | 有限元素法<br>Method of Finite Elements | 3 |
| Graduate | 資料分析方法<br>Data Analytics | 3 |

| | | |
|---|---|---|
| Graduate | 微奈米尺度熱傳<br>Micro/Nanoscale Heat Transfer | 3 |
| Graduate | 電漿材料製程技術<br>Plasma Materials Fabrication Technology | 3 |
| Graduate | 生醫奈微米工程<br>Nano/micro Engineering in Biomedicine | 3 |
| Graduate | 細胞微機電及微流體導論<br>Introduction to Cellular BioMEMS and Biomicrofluidics | 3 |
| Graduate | 膠體與界面現象<br>Colloid and Interfacial Phenomena | 3 |
| Graduate | 應用電化學<br>Applied Electrochemistry | 3 |
| Graduate | 半導體製程設備實務<br>Practice of Semiconductor Equipment | 3 |

※課程非於每學年開授，請依本校課程資訊與選課系統公告規劃選課※

※Please refer to the current course catalog for the actual course offerings each semester.※