

# Department of Materials Science and Engineering MS

## Study Guide Map in Academic Year 2025

培育材料理論與實務並重，創新研發及宏觀視野之專業工程師。

To cultivate global-perspective and innovative materials engineers who have solid background in both theories and practical assignment.

### Master's Year 1

### Master's Year 2

### Professional degree graduates

#### Seminar(I)

#### Seminar(II)

#### Dissertation/Thesis Guide(I)

#### Dissertation/Thesis Guide(II)

#### Dissertation/Thesis Guide(III)

#### Dissertation/Thesis Guide(IV)

#### Research Ethics

#### Doctoral dissertation

**Further Education:** Students can apply to master's and doctoral programs in materials science at home and abroad, or to related research institutes in electronics, electrical engineering, mechanical engineering, chemical engineering, biomedical engineering, etc.

**Employment:**

- Traditional industries:** CSC 、YUSCO 、FCFC 、KTM 、Cacher 、AIDC... 。
  - Semiconductor industry :** TSMC 、Nanya 、ASE 、UMC... 。
  - Electronics and Optoelectronics Technology Industry :** AUO 、CMI 、Radiant 、PTI 、UMC 、NSP 、Compal... 。
  - Instruments, materials and equipment industry:** Fanda 、SGS 、Sang Guang 、Zili 、Yi Hong... 。
  - research unit:** ITRC 、MIRDC 、NCSIST 、IBMI 、NSRRC... 。
- Job titles:** R&D Engineer, Process Engineer, Quality Control Engineer, Sales Engineer, Precision Instrument Operator... 。

Electronic Ceramics

Electronic Materials

Composite materials

Thin Film Technology

Display Technology and Materials

Principle of Solar Cell and Application

Magnetic Materials

Welding Metallurgy

Synthesis of Particles

Amorphous Materials

Advanced Polymer Materials

Electron Microscopic Analysis

Advanced Ceramic Materials

Advanced Welding Processes

Functional Ceramic Materials

Micro-Ceramic Powder Fabrication and Application

High temperature materials

Defect Analysis in Materials science

Defect Chemistry of Materials

Application of Artificial Intelligence on Materials Science and Engineering

Materials Characterization and Analysis

Mechanical Property Analysis of Materials

Alloy Strengthening Theories

Nanotechnology on Biomedical Engineering

Optoelectronic Materials and Engineering

Advanced Mechanical Properties of Materials

IC Package Processing and Materials

Nano-Materials Preparation and Characterization

Wear and Lubrication of Materials

Technology of Flexible Electronic Materials

Production of Inorganic Materials

The Technologies of Manufacturing Processes for the Semi-conductor Igrat

Biomaterials

Nano Materials and Technologies

Plasma Processing and Application

Transmission Electron Microscopy

Principle of Materials Corrosion

Surface Treatments and Analysis

Advanced Solid State Physics

High Temperature Plastic Deformation

Powder Metallurgy

Quantum Chemistry

Diffusion Theory

Introduction to Powder Characteristics

Applications of Transmission Electron Microscopy

Advanced Quantum Physics

Stress Analysis and Measurements

Advanced Metallurgical Thermodynamics

Advanced solid state physics

Structure Analysis of Materials

Advanced Physical Metallurgy

Materials Defects

X-ray Crystallography

(Choose one of the two)

educational goals

Required Professional

Elective Professional Courses

核心必修