PME 3349 Nanotechnology and its applications

奈米科技與應用

Instructor:

Ming-Huang Li

Objectives:

This course is intended for the undergraduate student who would like to expose herself or himself to the field of microelectromechanical systems (MEMS) and nanoelectromechanical systems (NEMS). This course will focus on the microfabrication technologies, micromechanics, and applications of micro- and nano-devices.

Prerequisites:

General Physics, Mechanics of Materials, Engineering Mathematics, Electrical Circuits

Grading:

Mid-term Exam **(30%)**

Final Exam **(30%)**

Homework and/or Individual report **(20%)**

Group report and/or Term Project **(20%)**

Textbook:

Lecture Notes.

Key References:

1. Hong Xiao, *Introduction to Semiconductor Technology 2nd ed.*, SPIE Press, Bellingham, Washington USA, 2012.
2. Silvan Schmid, Luis Guillermo Villanueva, and Michael Lee Roukes, *Fundamentals of Nanomechanical Resonators*, Springer International Publishing Switzerland 2016.

Tentative Course Outline:

(1) Introduction to nanotechnology
(2) Micro and Nano Fabrication Technologies
(3) Materials for Nano Devices
(4) Micromechanics
(5) Electro-mechanical Modeling of Transducers
(6) Noise in Nanomechanical Systems
(7) Interface Circuits
(8) Measurement and Characterization Techniques

生成式人工智慧倫理聲明：**禁止使用**

經仔細考量後，本課程授課教師認為不宜於此門課程當中使用生成式人工智慧於課堂學習當中。因本課程的內容於生成式 AI 中尚有諸多錯誤，且容易影響學生對基礎核心知識之判讀。

根據本校公布之「大學教育場域 AI 協作、共學與素養培養指引」，本門課程採取**禁止使用**，以下為相關的監管機制。

修讀本門課程之學生應注意本門課不得繳交使用生成式人工智慧所產出的作業、報告或個人心得。若經查核發現，教師、學校或相關單位有權重新針對作業或報告重新評分或不予計分。
修讀本課程之學生於選課時視為同意以上倫理聲明。

Ethical Statement on Generative Artificial Intelligence: **Prohibition on Use**

After careful consideration, the course instructor believes that it is not appropriate to use generative AI in learning for this course.

Students taking this course should be aware that assignments, reports, or personal reflections generated using AI models are strictly prohibited. If such use is detected, the course instructor, university, or relevant authority reserves the right to re-evaluate or not score the assignment or report.

Students who enroll in this course are deemed to have agreed to the above ethical statement at the time of course selection.