

Academic Org: Fac Office of Engineering – Subject: Courses offered by Fac of Erg

Course: ENGG1310 **Course ID:** 011959 **Eff Date:** 2022-07-01 **Crse Status:** Active **Apprv. Status:** Approved **【Course Rev】**
Engineering Physics: Electromagnetics, Optics and Modern Physics 工程物理: 電磁學、光學及近代物理

This is an introductory calculus-based engineering physics course covering topics in electromagnetics, optics and modern physics. Topics in electromagnetics include: electric and magnetic properties, Coulomb's law, Gauss' law, electromagnetic energy and forces, Biot-Savart law, electromagnetic fields and Maxwell's equations, propagation of plane electromagnetic waves. Topics in optics include: optical interference, interferometers, optical diffraction. Topics in modern physics include: wave-particle duality, momentum and energy of photons and electrons, electronic states and energy bands, electrical conduction in metals and semiconductors. Contents will be supplemented by discussions on applications relevant to engineering.

本科是工程物理的基礎學科，當中運用到微積分教學。本科涵括電磁學、光學和近代物理。電磁學的內容包括：電和磁的特性、庫倫定律、高斯定律、電磁的能量和力、畢奧—薩代爾定律、電磁場和麥克斯韋方程組，平面波傳播。光學的內容包括：光干擾、干擾儀、光繞射。近代物理的內容包括：波粒二象性、光子和電子的動量與能量、電子態與能帶、金屬和半導體的電導。科目內容將輔以物理知識在工程學上之應用。

Grade Descriptor: A

EXCELLENT – exceptionally good performance and far exceeding expectation in all or most of the course learning outcomes; demonstration of superior understanding of the subject matter, the ability to analyze problems and apply extensive knowledge, and skillful use of concepts and materials to derive proper solutions.

有關等級說明的資料，請參閱英文版本。

B

GOOD – good performance in all course learning outcomes and exceeding expectation in some of them; demonstration of good understanding of the subject matter and the ability to use proper concepts and materials to solve most of the problems encountered.

有關等級說明的資料，請參閱英文版本。

C

FAIR – adequate performance and meeting expectation in all course learning outcomes; demonstration of adequate understanding of the subject matter and the ability to solve simple problems.

有關等級說明的資料，請參閱英文版本。

D

MARGINAL – performance barely meets the expectation in the essential course learning outcomes; demonstration of partial understanding of the subject matter and the ability to solve simple problems.

有關等級說明的資料，請參閱英文版本。

F

FAILURE – performance does not meet the expectation in the essential course learning outcomes; demonstration of serious deficiencies and the need to retake the course.

有關等級說明的資料，請參閱英文版本。

Equivalent Offering:

Units: 3 (Min) / 3 (Max) / 3 (Acad Progress)

Grading Basis: Graded

Repeat for Credit: N

Multiple Enroll: N

Course Attributes:

Topics:

COURSE OUTCOMES

Learning Outcomes:

- By the end of the course, students should be able to
- Perform qualitative and quantitative analysis of problems in electromagnetics, optics and modern physics
 - Recognize the physical properties of particles and waves
 - Understand the origins and the properties of electrical conduction in metals and semiconductors
 - Understand the key physical parameters and the fundamental laws in electromagnetism and wave propagation

Course Syllabus:

According to the course teacher in the respective teaching term.

Assessment Type:

Essay test or exam	: 50%
Lab reports	: 10%
Others	: 12%

Short answer test or exam : 28%

Feedback for Evaluation:

We welcome students' comments and feedback on the course. There are several main channels for collecting students' feedback.

1. Tutorial: Tutorial is held every week, in which students can pass their feedback and problem about the course to the teaching assistants.
2. Informal online contact
Students can write their comments via email or newsgroup. Teaching assistants will follow up with the comments or pass the information to the course instructor if necessary.
3. Individual consulting
Students are welcome to visit the course instructor during office hours. They can exchange opinions on improving the effectiveness of course delivery.
4. Faculty course questionnaire: At the end of the course, students are required to provide feedback on different aspects related to teaching and learning of the course through a formal evaluation questionnaire.

Required Readings:

To be provided by course teachers

Recommended Readings:

- 1."Principles of Physics", 9th edition international student version, Halliday, Resnick and Walker (Wiley 2010).
- 2."Fundamentals of Engineering Electromagnetics", David K. Cheng, (Prentice-Hall 1992)

OFFERINGS

1. ENGG1310 Acad Organization=ENO; Acad Career=UG

COMPONENTS

LEC : Size=100; Final Exam=Y; Contact=3
TUT : Size=100; Final Exam=Y; Contact=1

ENROLMENT REQUIREMENTS

1. ENGG1310 **Enrollment Requirement Group:**
Not for students who have taken ENGG2520, ESTR2006 or ESTR1003.

CAF

eLearning hrs for blended cls 0
No. of micro-modules 0
Research components (UG) 0%

< E N D O F R E P O R T >