國立台灣科技大學 114學年 第2學期　課程大綱

Spring 2026 NTUST Course Outline

授課教師：馬自莊

Instructor:Tzyh-Ghuang Ma

課程名稱：電磁學

Course Title：Electromagnetics

2026/11/3

課程代號： EE3201302 Course Code 學分數： 3 Credits	必選修：必修/半學年 Required/Electve:Required/Half Yr. 先修課程： Prerequisites
節次教室： F6(IB-306) F7(IB-306) R3(IB-306) Time/Location	
專業核心能力： Core Professional Competencies	
課程網址： Course Website	
課程宗旨： Course Objectives	電場理論，庫倫定律，高斯定律，電位能，電場能量與功，拉普勒斯方程式，邊界值問題，電容，靜磁場理論，直流電流，安培定律，磁場向量位能，磁場能量與功邊界值問題，電磁材料特性，電感，電磁感應，法拉第定律，電機原理，馬克思威爾方程式。 1. Understand the big ideas of electromagnetics, including: Static and dynamic electromagnetic (EM) fields, energy, and power EM fields and waves within and at the boundaries of media EM radiation and propagation in space and within transmission lines Circuit behavior of simple EM devices and transmission lines EM forces on charges, currents, and materials; mechanically produced fields Photon behavior 2.Exercise mathematical skills, including: Vectors and phasors Partial differential equations"
課程大綱： Outline of Lectures	電場理論，庫倫定律，高斯定律，電位能，電場能量與功，拉普勒斯方程式，邊界值問題，電容，靜磁場理論，直流電流，安培定律，磁場向量位能，磁場能量與功邊界值問題，電磁材料特性，電感，電磁感應，法拉第定律，電機原理，馬克思威爾方程式。 1. Understand the big ideas of electromagnetics, including: Static and dynamic electromagnetic (EM) fields, energy, and power EM fields and waves within and at the boundaries of media EM radiation and propagation in space and within transmission lines Circuit behavior of simple EM devices and transmission lines EM forces on charges, currents, and materials; mechanically produced fields Photon behavior 2.Exercise mathematical skills, including: Vectors and phasors Partial differential equations"
授課方式： Method of Instruction	講授 Lecture：100% 分組討論 Group discussion：0% 案例研討 Case study：0% 操做練習 Practical exercises：0% 講授 Lecture：%

教科書： Textbooks	書名：Elements of Engineering Electromagnetics, 6th ed. 作者：N. N. Rao 出版：Prentice-Hall 2004.
參考書目： References	書名：Fundamentals of Engineering Electromagnetics 作者：D. K. Cheng 出版：Addison-Wesley, 1993. 教學網站：(Open course) 互動式學習動畫 http://em.emedu.org.tw/elec_sim/index.html 科普影片 http://em.emedu.org.tw/popular_science.aspx
修課須知： Notice	Exam：(low-high) 40% - 50% HW： 10% In-class Quiz： 0% （為維持公平請自行練習，不計分） Class (bonus)： 5% max
評量方式： Grading	
備註說明： Notes	