





シラバス参照

科目名/Subject	電磁気学B
曜日・講時/Day/Period	前期 金曜日 1 講時
科目群/Categories	JYPE科目
単位数/Credit(s)	2
対象学部/Object	
担当教員(所属) /Instructor (Position)	
セメスター/Semester	
科目ナンバリング /Course Numbering	-
使用言語 /Language Used in Course	

授業題目 /Class Subject	Electricity and Magnetism B																																															
授業の 目的と概要 /Object and Summary of Class	<p>Objective:</p> <ul style="list-style-type: none"> Students will learn basic principles and analysis methods for electromagnetic induction and radiation. <p>Summary of class:</p> <ul style="list-style-type: none"> Basic theories and analysis methods for electromagnetic fields in vacuum and dielectric/magnetic media: Maxwell's equations, plane wave and its reflection/transmission, dielectric/magnetic media and their boundary conditions etc. Basic principles and analysis methods for electromagnetic induction and radiation: Faraday's law, radiation from electric dipole etc. 																																															
学修の 到達目標 /Goal of Study	<p>Students are expected to develop following skills and views after completion of the class.</p> <ul style="list-style-type: none"> Mathematical skills for dealing with electric/magnetic fields in vacuum and dielectric/magnetic media. Mathematical skills for dealing with electromagnetic induction and radiation. Understanding of basic electromagnetic phenomena from physical point of view. 																																															
授業内容・ 方法と 進度予定 /Contents and Progress Schedule of the Class	<ol style="list-style-type: none"> Review of Electricity and Magnetism A, I Review of Electricity and Magnetism A, II Maxwell's equations and electromagnetic plane wave in vacuum Electromagnetic plane waves in vacuum and matter Reflection and transmission of plane wave at planar boundary between two media Radiation of electromagnetic wave Radiation of electromagnetic wave by an electric dipole Electromagnetic induction (Faraday's law) Dielectric materials and electric dipole moment Polarization, dielectric constant and capacitors Boundary conditions at two different dielectric media Boundary conditions at two different magnetic media Nonlinear media; ferromagnetism and magnetic circuit Magnetic dipole and magnetization current Final Exam 																																															
成績評価 方法 /Evaluation Method	<p>Students are graded on their submitted reports (30 %) and final exam (70%).</p> <p>Makeup exam is unavailable.</p>																																															
教科書 および 参考書 /Textbook and References	<table border="1"> <thead> <tr> <th>No</th><th>書名</th><th>著者名</th><th>出版社</th><th>出版年</th><th>ISBN/ISSN</th><th>資料種別</th></tr> </thead> <tbody> <tr> <td>1.</td><td>『Electricity and Magnetism』</td><td>E. M. Purcell</td><td>Berkeley</td><td></td><td></td><td></td></tr> <tr> <td>2.</td><td>『Introduction to Electrodynamics (2nd ed.)』</td><td>D. J. Griffiths</td><td></td><td></td><td></td><td></td></tr> <tr> <td>3.</td><td>『The Feynman Lectures on Physics (Volume 2)』</td><td>R. P. Feynman</td><td></td><td></td><td></td><td></td></tr> <tr> <td>4.</td><td>『Classical Electrodynamics (2nd ed.)』</td><td>J. D. Jackson</td><td></td><td></td><td></td><td></td></tr> <tr> <td>5.</td><td>『Electromagnetics (2nd ed.)』</td><td>J. A. Edminister</td><td></td><td></td><td></td><td></td></tr> </tbody> </table>						No	書名	著者名	出版社	出版年	ISBN/ISSN	資料種別	1.	『Electricity and Magnetism』	E. M. Purcell	Berkeley				2.	『Introduction to Electrodynamics (2nd ed.)』	D. J. Griffiths					3.	『The Feynman Lectures on Physics (Volume 2)』	R. P. Feynman					4.	『Classical Electrodynamics (2nd ed.)』	J. D. Jackson					5.	『Electromagnetics (2nd ed.)』	J. A. Edminister				
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 関連URL /URL	
 授業時間外 学修 /Preparation and Review	<p>Self-directed learning is necessary.</p> <p>Students are required to be ready for each class by reading the handouts and references in advance of the class.</p> <p>Review of the lecture is strongly recommended after the class.</p>
 その他 /In Addition	<ol style="list-style-type: none"> 1. The lecture will be delivered in real time and in person. Announcement on the lecture such as switching the lecture style from in person to online will be delivered via Google Classroom. 2. This class is an advanced class of ``Electricity and Magnetism A''. Students are recommended to join this class after the completion of ``Electricity and Magnetism A''. 3. Handouts are used in this class, which can be downloaded via Google Classroom. 4. Preparation and review are strongly recommended. 5. Office hours are TBD by an appointment in advance via e-mail or other approach. The contact information for the instructor will be given in the class.
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1単位の授業科目は、45時間の学修を必要とする内容をもって構成することを標準としています。1単位の修得に必要な学修時間の目安は、「講義・演習」については15～30時間に授業および授業時間外学修(予習・復習など)30～15時間、「実験・実習及び実技」については30～45時間の授業および授業時間外学修(予習・復習など)15～0時間です。

One-credit courses require 45 hours of study. In lecture and exercise-based classes, one credit consists of 15-30 hours of class time and 30-15 hours of preparation and review outside of class. In laboratory, practical skill classes, one credit consists of 30-45 hours of class time and 15-0 hours of preparation and review outside of class.