Fundamentals of Physics III

Undergraduate / Graduate	Undergraduate	**Registration Code**	0053221
Course Category	Sciences Basic	**Credits**	2.0
Term (Semester) / Day / Period	G-II (1st year, Spring Semester) / Wed. / 2 (10:30～12:00)		
Instructor	GELLOZ Bernard Jacques		
Contact e-mail of the Instructor	bernard.gelloz.s6@f.mail.nagoya-u.ac.jp		

●Goals of the Course

This is the third and last of a series of courses that cover the Fundamentals of Physics, introducing the concepts and laws of electricity and magnetism. Electricity and magnetism are important for understanding nature and are essential in science and engineering.

●Objectives of the Course

Students learn the fundamentals of electricity and magnetism and its mathematical descriptions and will be able to solve a range of problems in electricity and magnetism.

By the end of this course, students will be able to: 1) Understand the concepts of electric fields, electric potential, capacitance, current and resistance, magnetic fields, induction and inductances, etc. 2) Understand Coulomb's law, Gauss' law, law of Biot and Savart, Ampere's law, Faraday's law, Lenz's law, etc., and solve actual problems in electricity and magnetism. 3) Find mathematical solutions to problems in electricity and magnetism expressed by equations and explain the physical meanings of the solutions.

●Course Content or Plan

Chapter 21: Electric Charge
Chapter 22: Electric Fields
Chapter 23: Gauss' Law
Chapter 24: Electric Potential
Chapter 25: Capacitance
Chapter 26: Current and Resistance
Chapter 27: Circuits
Chapter 28: Magnetic Fields
Chapter 29: Magnetic Fields Due to Currents
Chapter 30: Induction and Inductance

●Course Prerequisites and Related Courses

Fundamentals of Physics I & II and Calculus I&II.

●Course Evaluation Method and Criteria

Course withdrawal is possible until the day of the lecture that follows the midterm examination. Students do not need to submit a Course Withdrawal Request to the course supervisor, but a withdrawal notification through NUCT is asked and the student must do the official withdrawal process with the ILAS office.

A student will receive the ABSENT grade if his attendance is below 10 or he does not sit for an Examination, without valid reason. Otherwise, a student who wishes to receive the ABSENT grade must inform the course supervisor, until the day before the Final Examination.

Evaluation: Assignments: 15%, Midterm Examination: 40%, Final Examination: 45%.

●Study Load (Self-directed Learning Outside Course Hours)

This course is a bit more intensive than other Fundamentals of Physics courses (FPI&FPII) because of higher mathematical skills involved (e.g. polar coordinates, surface and volume integration) and the complexity of concepts. You are expected to register for Fundamental Physics Tutorial IIa (FPTIIa) and to spend at least several hours per week studying to do well in this course.

●How to Respond to Questions

Please use email or the dedicated Forum in NUCT to contact teachers and Teaching Assistants if you have any questions outside class. In class, students may ask questions at any time.

Textbook	Fundamentals of Physics Extended 11th Edition International Student Version with WileyPLUS Set (John Wiley & Sons, 2018, ISBN-13: 978-1118230725)
Reference Book	Feynman Lectures On Physics (Vol. 2) by Richard Phillips Feynman (Pearson PTR) (ISBN-13: 978-0465024940)