Module Handbook

Course:	**Electricity and Magnetism**
Module Level:	Undergraduate
Code:	FIT303
Sub-heading, if applicable:	E & M
Courses included in the module, if applicable:	-
Semester/Term:	5th / Third Year
Module Coordinator:	Prof. Moh. Yasin
Lecturer(s):	Prof. Moh. Yasin, Pujiyanto M.S. and Febdian Rusydi Ph.D.
Language:	Bahasa Indonesia
Classification within the curriculum:	Compulsory Course / ~~Elective Course~~
Teaching format / class hours per week during semester:	4 hours of lectures (50 min / hour)
Workload:	4 hours of lectures, 4 hours of structural activities, 4 hoursof individual study, 13 weeks per semester, and total of 156 hours per semester ~ 5.2 ECTS*
Credit Points:	4
Requirement(s):	(FIT202) Mathematical Physics II
Learning Goals/Competencies:	**General Competence (Knowledge):** Students are able to utilize the physics electricity and magnetism to understand interactions in matter. **Specific Competence:** 1. Ability to calculate static electric fields and potentials for any kind of electrical charge distribution 2. Ability to calculate static magnetic fields and vector potentials for any kind of electrical current distribution 3. Ability to calculate electrodynamics fields and potentials for any kind of non statics sources 4. Ability to explain of basic concept of electrodynamics induction and maxwell equation especially for electromagnetic waves.
Contents:	This is a comprehensive class to introduce phenomena due to the electricity and magnetism which lead to the most significant field in physics world: electromagnetics. The reason we can sit well on a chair, the formation of rainbow, the mechanism of all modern technologies, all chemical reactions occurring and almost every single physical phenomena in our daily life are governed by the electromagnetic force. The electromagnetic force consists of the electric force and magnetic force. Both forces exist because of the presence of charges, practically in daily life the charges come from electrons. The electromagnetic force itself is well explained by classical electrodynamic theory, namely Maxwell equations. Therefore,

	Maxwell equations becomes the most important physics law in bachelor physics education in the university. To achieve this, we design the course inductively by following our chosen textbook (see point 2). By inductively means that we learn the electrodynamic theory from the case of electrostatics and of magnetostatics, then we introduce the dynamic case by changing the charge state (mathematically by making the momentum of charges changes by time, $d\vec{p}/dt \neq 0$). Eventually, we tailor everything to construct the Maxwell equations, which is the final destination of this course.
Soft Skill Attribute:	Effort and ethic.
Study/Exam Achievements:	Passing grade is D (equivalent of score 40.0 of 100.0). The score is determined by 10 quizzes which are distributed in the semester. Maximum score for each quiz is 10. The quiz will take 15 – 20 minutes. There will be 10 homework sets in the semester. Each homework set contains 10 problems. The homework is not to be submitted, but one of the problem will be asked in the quiz. Score to grade conversion: A : 75 – 100 AB : 70 - 74.99 B : 65 - 69.99 BC : 60 - 64.99 C : 55 - 59.99 D : 40 - 54.99 E : 0 - 39.99
Forms of Media	Whiteboard and projector.
Learning Method:	Lecturing, homework and tutorial
Literature(s):	David J. Griffiths. 2013. *Introduction to Electrodynamics*. 4th edition. Pearson.
Notes:	*Total ECTS = {(total hours workload × 50 min) / 25 hours Each ECTS is equals with 25 hours.