Tamkang University Academic Year 108, 1st Semester Course Syllabus

Course Title	ELECTRODYNAMICS (I)	Instructor	HO, CHOON-LIN
Course Class	TSPXM1A MASTER'S PROGRAM, DEPARTMENT OF PHYSICS, 1A	Details	◆ General Course ◆ Selective ◆ One Semester

Departmental Aim of Education

Ⅰ. Conveying professional knowledge: Teach the students to learn the core knowledge of physics, to obtain the basic skills needed for physics research, and to apply the professional knowledge to physics related technologies.

Ⅱ. Analyzing and solving problems: Guide the students to analyze problems, and to acquire the mathematical ability to quantify conceptual models and also the capability needed to think and to innovate in solving various scientific and engineering problems.

Ⅲ. Training for experimental techniques: Teach the students on how to carry out and to verify various experiments, and at the same time to have the mentality of working cautiously and the awareness in operating safely.

Ⅳ. Expressing personal characteristics: Help the students to use their personal characteristics, like resolution, sincerity, and concentration, plus their professional skills to gain recognition among the executives and their peers.

Ⅴ. Cultivating team spirit: Train the students to have the organizational ability and the communicational skills to let them have the adaptability to integrate into a professional team, and to obtain the ability to bring out and to put to use the strength of the team to solve professional problems.

Ⅵ. Building international views: Comply to the trends of globalization to build an international learning environment and opportunities in order to educate the students to continue in their self-advancements, to absorb new worldwide knowledge, and to become a professional with international views in their future perspective careers.

Subject Departmental core competences

A. To acquire the core basic knowledge in the field of physics.(ratio:50.00)

B. To understand the overall features of specific fields of physics.(ratio:20.00)

D. To cultivate the basic ability to discover, to analyze, and to solve problems.(ratio:20.00)

G. To comprehend the trend of technological development and to acquire the knowledge and skills of other fields needed in their professional career.(ratio:10.00)

Subject Schoolwide essential virtues

2. Information literacy. (ratio:50.00)

5. Independent thinking. (ratio:50.00)

Course Introduction	This course introduces the basic theory and applications of classical electrodynamics.	

The correspondences between the course's instructional objectives and the cognitive, affective, and psychomotor objectives.

Differentiate the various objective methods among the cognitive, affective and psychomotor domains of the course's instructional objectives.

I. Cognitive : Emphasis upon the study of various kinds of knowledge in the cognition of
the course's veracity, conception, procedures, outcomes, etc.
II.Affective : Emphasis upon the study of various kinds of knowledge in the course's appeal,
morals, attitude, conviction, values, etc.
III.Psychomotor: Emphasis upon the study of the course's physical activity and technical
manipulation.

No.	Teaching Objectives	objective methods
1	1. To learn the basics ideas of Maxwell's theory of electrodynamics 2. To study problems in electrostatics and magnetostatics in vacuum . 3. To study the properties and propagation of electromagnetic waves in vacuum.	Cognitive

The correspondences of teaching objectives : core competences, essential virtues, teaching methods, and assessment

No.	Core Competences	Essential Virtues	Teaching Methods	Assessment
1	ABDG	25	Lecture	Testing

Course Schedule			
Week	Date	Course Contents	Note
1	108/09/09 ~ 108/09/15	A brief review of vector analysis	
2	108/09/16 ~ 108/09/22	---- ditto ----	
3	108/09/23 ~ 108/09/29	Electrostatics - Coulomb's and Gauss' laws	

4	108/09/30~ 108/10/06	---- ditto ----	
5	108/10/07~ 108/10/13	Magnetostatics - Biot-Savart's, and Ampere's law	
6	108/10/14~ 108/10/20	---- ditto ----	
7	108/10/21~ 108/10/27	---- ditto ----	
8	108/10/28~ 108/11/03	General electromagnetic fields - Faraday's law	
9	108/11/04~ 108/11/10	---- ditto ----	
10	108/11/11~ 108/11/17	期中考 週	
11	108/11/18~ 108/11/24	Maxwell Equations in vacuum, Poynting Theorem	
12	108/11/25~ 108/12/01	Electromagnetic Radiation in vacuum	
13	108/12/02~ 108/12/08	---- ditto ----	
14	108/12/09~ 108/12/15	Retarded Potential and Lienard-Wiechert Potential	
15	108/12/16~ 108/12/22	---- ditto ----	
16	108/12/23~ 108/12/29	Radiation from a Moving Charge, Synchrotron Radiation	
17	108/12/30~ 109/01/05	---- ditto ----	
18	109/01/06~ 109/01/12	期末考週	

Requirement	
Teaching Facility	Other (Blackboard)
Textbooks and Teaching Materials	Classroom notes
References	D.J. Griffiths, Introduction to Electrodynamics, 4th ed., Pearson, 2012. Andrew Zangwill, Modern Electrodynamics, Cambridge Univ. Press, 2013. J.D. Jackson, Classical Electrodynamics, 3rd ed., John Wiley, 1999.
Number of Assignment(s)	(Filled in by assignment instructor only)
Grading Policy	◆ Attendance： % ◆ Mark of Usual： % ◆ Midterm Exam： % ◆ Final Exam： % ◆ Other〈3 quizzes, each100/3%〉：100.0 %

Note	This syllabus may be uploaded at the website of Course Syllabus Management System at http://info.ais.tku.edu.tw/csp or through the link of Course Syllabus Upload posted on the home page of TKU Office of Academic Affairs at http://www.acad.tku.edu.tw/CS/main.php .
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