

Tamkang University Academic Year 109, 2nd Semester Course Syllabus

Course Title	REVIEW ON PHOTONICS	Instructor	WU, JUNYI
Course Class	TSPBB1A DEPARTMENT OF PHYSICS (SECTION OF APPLIED PHYSICS), 1A	Details	<ul style="list-style-type: none"> ◆ General Course ◆ Selective ◆ One Semester
Relevance to SDGs	SDG4 Quality education		
Departmental Aim of Education			
<p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p>			
Subject Departmental core competences			
<p>B. To understand the overall features of specific fields of physics.(ratio:50.00)</p> <p>G. To comprehend the trend of technological development and to acquire the knowledge and skills of other fields needed in their professional career.(ratio:50.00)</p>			
Subject Schoolwide essential virtues			
<p>2. Information literacy. (ratio:50.00)</p> <p>5. Independent thinking. (ratio:50.00)</p>			

Course Introduction	This course is an introduction to Opto-electronics. It includes the history of Optics, fundamental of Optics, chromatics, and introduction to the technology of Opto-electronics.
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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	Through this course, students could have a preliminary understanding of the basic concepts of Optics and the technology of Opto-electronics.	Cognitive

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

No.	Core Competences	Essential Virtues	Teaching Methods	Assessment
1	BG	25	Lecture, Discussion	Discussion(including classroom and online), Report(including oral and written)

Course Schedule

Week	Date	Course Contents	Note
1	110/02/22 ~ 110/02/28	An introduction to Opto-electronics 光電科技簡介	This syllabus would be subject to change according to students' interests and responses. 此課程進度會根據學生的興趣與課堂反饋進行調整。

2	110/03/01 ~ 110/03/07	The story of light 光的往事	
3	110/03/08 ~ 110/03/14	The story of electronics 電的往事	
4	110/03/15 ~ 110/03/21	Electromagnetism and classical optics 電磁學及經典光學	
5	110/03/22 ~ 110/03/28	Electromagnetism and classical optics 電磁學及經典光學	
6	110/03/29 ~ 110/04/04	Electromagnetic waves and spectroscopy 電磁波及光譜	
7	110/04/05 ~ 110/04/11	Chromatics and color display 色彩學與彩色顯示器	
8	110/04/12 ~ 110/04/18	Telescope and microscope 望遠鏡與顯微鏡	
9	110/04/19 ~ 110/04/25	Photoelectric effect and solar energy 光電效應與太陽能	
10	110/04/26 ~ 110/05/02	Midterm Exam Week	
11	110/05/03 ~ 110/05/09	Light sources: incandescence and luminescence 熱光源 與冷光源	
12	110/05/10 ~ 110/05/16	Fluorescence 熒光	
13	110/05/17 ~ 110/05/23	Semiconductor and LED 半導體與LED	
14	110/05/24 ~ 110/05/30	Laser 雷射	
15	110/05/31 ~ 110/06/06	Optical fiber 光纖	
16	110/06/07 ~ 110/06/13	Opto-electronics in quantum information: realization of a qubit 量子資訊中的光電：Qubit的製備	
17	110/06/14 ~ 110/06/20	Opto-electronics in quantum communication and computation 量子通訊與量子計算中的光電	
18	110/06/21 ~ 110/06/27	Final Exam Week	
Requirement			
Teaching Facility	Computer, Projector, Other (Whiteboard, DVD player)		
Textbooks and Teaching Materials	A lecture manuscript will be provided. 每堂課後將提供課堂講義。		
References			

Number of Assignment(s)	(Filled in by assignment instructor only)
Grading Policy	◆ Attendance : % ◆ Mark of Usual : 30.0 % ◆ Midterm Exam : 30.0 % ◆ Final Exam : 40.0 % ◆ Other () : %
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 . ※ Unauthorized photocopying is illegal. Using original textbooks is advised. It is a crime to improperly photocopy others' publications.