

Tamkang University Academic Year 112, 2nd Semester Course Syllabus

Course Title	X-RAY SPECTROSCOPY AND APPLICATIONS	Instructor	HSIAO-TSU WANG
Course Class	TSXAD1A DOCTORAL PROGRAM IN APPLIED SCIENCES, 1A	Details	<ul style="list-style-type: none"> ◆ General Course ◆ Selective ◆ One Semester
Relevance to SDGs	SDG7 Affordable and clean energy SDG9 Industry, Innovation, and Infrastructure SDG17 Partnerships for the goals		
Departmental Aim of Education			
To cultivate high-level spiritual talents demanded by industry and academia as well as with solid knowledge in material science and ability to do transnational and interdisciplinary research independently.			
Subject Departmental core competences			
A. To have solid knowledge and ability to carry out relevant research in material science. (ratio:30.00) B. To acquire capabilities in comprehensive vision and conducting transnational interdisciplinary research.(ratio:15.00) C. To obtain ability in innovation, independent thinking and independent research. (ratio:20.00) D. To have good oral and written skills as well as a good sense in teamwork.(ratio:20.00) E. To have a comprehensive understanding in professional morality and ethics.(ratio:15.00)			
Subject Schoolwide essential virtues			
1. A global perspective. (ratio:15.00) 2. Information literacy. (ratio:10.00) 3. A vision for the future. (ratio:10.00) 4. Moral integrity. (ratio:5.00) 5. Independent thinking. (ratio:30.00) 6. A cheerful attitude and healthy lifestyle. (ratio:5.00) 7. A spirit of teamwork and dedication. (ratio:20.00) 8. A sense of aesthetic appreciation. (ratio:5.00)			

Course Introduction	Introduction to x-ray spectroscopies and its applications on material science.
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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	Understanding the basics of x-ray spectroscopies and apply these spectroscopies in various advanced materials	Cognitive

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

No.	Core Competences	Essential Virtues	Teaching Methods	Assessment
1	ABCDE	12345678	Lecture, Discussion	Discussion(including classroom and online), Report(including oral and written)

Course Schedule

Week	Date	Course Contents	Note
1	113/02/19~ 113/02/25	Introduction	
2	113/02/26~ 113/03/03	X-ray diffraction-I	
3	113/03/04~ 113/03/10	X-ray diffraction-II	
4	113/03/11~ 113/03/17	Synchrotron Radiation facility	
5	113/03/18~ 113/03/24	X-ray spectroscopy-I	

6	113/03/25 ~ 113/03/31	Viste NSRRC	
7	113/04/01 ~ 113/04/07	Holiday	
8	113/04/08 ~ 113/04/14	X-ray spectroscopy-II	
9	113/04/15 ~ 113/04/21	X-ray spectroscopy-III	
10	113/04/22 ~ 113/04/28	X-ray spectroscopy-IV	
11	113/04/29 ~ 113/05/05	Case studies-I	
12	113/05/06 ~ 113/05/12	Viste NSRRC	
13	113/05/13 ~ 113/05/19	Case studies-II	
14	113/05/20 ~ 113/05/26	Report work-I	
15	113/05/27 ~ 113/06/02	Report work-II	
16	113/06/03 ~ 113/06/09	Report work-III	
17	113/06/10 ~ 113/06/16	Viste NSRRC	
18	113/06/17 ~ 113/06/23	Final exam week	
Key capabilities			
Interdisciplinary			
Distinctive teaching			
Course Content		Logical Thinking Environmental Safety Sustainability issue	
Requirement			

Textbooks and Teaching Materials	Self-made teaching materials:Presentations
References	
Grading Policy	<p>◆ Attendance : 50.0 % ◆ Mark of Usual : % ◆ Midterm Exam : %</p> <p>◆ Final Exam : %</p> <p>◆ Other (oral) : 50.0 %</p>
Note	<p>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 .</p> <p>※ Unauthorized photocopying is illegal. Using original textbooks is advised. It is a crime to improperly photocopy others' publications.</p>