

Tamkang University Academic Year 113, 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 ◆ 3 Credits
Relevance to SDGs	SDG4 Quality education SDG6 Clean water and sanitation SDG7 Affordable and clean energy		
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	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
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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	Introduction to x-ray spectroscopies and its applications on material science.	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, Publication	Discussion(including classroom and online), Report(including oral and written)

Course Schedule

Week	Date	Course Contents	Note
1	114/02/17 ~ 114/02/23	Introduction	
2	114/02/24 ~ 114/03/02	Introduction-II	
3	114/03/03 ~ 114/03/09	X-ray diffraction-I	
4	114/03/10 ~ 114/03/16	X-ray diffraction-II	
5	114/03/17 ~ 114/03/23	Synchrotron Radiation facility-I	

6	114/03/24 ~ 114/03/30	Synchrotron Radiation facility-II	
7	114/03/31 ~ 114/04/06	holiday	
8	114/04/07 ~ 114/04/13	oral-1	
9	114/04/14 ~ 114/04/20	X-ray spectroscopy-I	
10	114/04/21 ~ 114/04/27	X-ray spectroscopy-II	
11	114/04/28 ~ 114/05/04	X-ray spectroscopy-III	
12	114/05/05 ~ 114/05/11	X-ray spectroscopy-IV	
13	114/05/12 ~ 114/05/18	Case studies-I	
14	114/05/19 ~ 114/05/25	Case studies-II	
15	114/05/26 ~ 114/06/01	Case studies-III	
16	114/06/02 ~ 114/06/08	oral-II	
17	114/06/09 ~ 114/06/15	Oral-III	
18	114/06/16 ~ 114/06/22	discussion	
Key capabilities			
Interdisciplinary			
Distinctive teaching			
Course Content		Gender Equality Education Logical Thinking Green Energy	
Requirement			

Textbooks and Teaching Materials	Self-made teaching materials:Presentations
References	
Grading Policy	<p>◆ Attendance : 10.0 % ◆ Mark of Usual : % ◆ Midterm Exam : 45.0 %</p> <p>◆ Final Exam : 45.0 %</p> <p>◆ Other () : %</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>