

## Tamkang University Academic Year 112, 2nd Semester Course Syllabus

Course Title	PLASMA TECHNOLOGY	Instructor	JHAO-YU GUO
Course Class	TEBXM1A MASTER'S PROGRAM, DEPARTMENT OF MECHANICAL AND ELECTRO-MECHANICAL ENGINEERING, 1A	Details	<ul style="list-style-type: none"> <li>◆ General Course</li> <li>◆ Selective</li> <li>◆ One Semester</li> </ul>
Relevance to SDGs	SDG3 Good health and well-being for people SDG4 Quality education SDG9 Industry, Innovation, and Infrastructure		
D e p a r t m e n t a l   A i m   o f   E d u c a t i o n			
I. To prepare students who have a comprehensive understanding of the principles of applied sciences and engineering to be innovators in the field of mechanical and electromechanical engineering. II. To train emerging professionals who possess a high level of expertise and ethical standards who will become independent research and development leaders in the industry. III. To motivate students who will pursue continuing education as a means to stay on the cutting edge of global competitiveness and meet changes in their careers and the workplace with confidence and ease.			
Subject Departmental core competences			
A. Head: Knowledge of mechanical and electromechanical engineering.(ratio:40.00) B. Hand: Hands-on skills and practical realization.(ratio:10.00) C. Heart: Love of learning and innovation.(ratio:25.00) D. Eye: Vision of progress and improvements.(ratio:25.00)			
Subject Schoolwide essential virtues			
1. A global perspective. (ratio:15.00) 2. Information literacy. (ratio:15.00) 3. A vision for the future. (ratio:15.00) 4. Moral integrity. (ratio:10.00) 5. Independent thinking. (ratio:20.00) 6. A cheerful attitude and healthy lifestyle. (ratio:5.00) 7. A spirit of teamwork and dedication. (ratio:15.00) 8. A sense of aesthetic appreciation. (ratio:5.00)			

Course Introduction	<p>Plasma is a plasma state that exists at room temperature and atmospheric pressure/ vacuum pressure. This course aims to introduce the fundamental concepts, diagnostic methods, and various applications of atmospheric pressure plasma/ vacuum plasma. It will also elucidate its applications in surface treatment, material synthesis, biomedical sciences, environmental engineering, and other fields. The goal is to enable students to gain an in-depth understanding and mastery of the principles and techniques associated with atmospheric pressure plasma/ vacuum plasma.</p>
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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	Familiarity with plasma principles and techniques. Train students' logical thinking abilities.	Cognitive

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

No.	Core Competences	Essential Virtues	Teaching Methods	Assessment
1	ABCD	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	Course Introduction, Grouping, and Basic Concepts of Atmospheric Pressure Plasma	
2	113/02/26 ~ 113/03/03	Basic Concepts of Atmospheric Pressure Plasma	
3	113/03/04 ~ 113/03/10	Basic Concepts of Atmospheric Pressure Plasma	
4	113/03/11 ~ 113/03/17	Basic Concepts of Atmospheric Pressure Plasma	

5	113/03/18 ~ 113/03/24	Carbon Footprint Verification	
6	113/03/25 ~ 113/03/31	Basic Concepts of Vacuum Plasma	
7	113/04/01 ~ 113/04/07	Teaching Observation Week	
8	113/04/08 ~ 113/04/14	Basic Concepts of Vacuum Plasma	
9	113/04/15 ~ 113/04/21	Midterm Examination Week	
10	113/04/22 ~ 113/04/28	Basic Concepts of Vacuum Plasma	
11	113/04/29 ~ 113/05/05	Agricultural Applications/ Introduction to Water Plasma	
12	113/05/06 ~ 113/05/12	Surface Treatment Applications/ Environmental Engineering Applications	
13	113/05/13 ~ 113/05/19	Biomedical Applications	
14	113/05/20 ~ 113/05/26	Chemical Reactions and Mechanisms	
15	113/05/27 ~ 113/06/02	Plasma Diagnostic Analysis	
16	113/06/03 ~ 113/06/09	Group Presentations	
17	113/06/10 ~ 113/06/16	Group Presentations	
18	113/06/17 ~ 113/06/23	Group Presentations	
Key capabilities	self-directed learning Information Technology Problem solving		
Interdisciplinary			
Distinctive teaching			
Course Content	Logical Thinking Environmental Safety Green Energy Sustainability issue		
Requirement			

Textbooks and Teaching Materials	Self-made teaching materials:Presentations
References	
Grading Policy	<p>◆ Attendance : 20.0 %   ◆ Mark of Usual : 15.0 %   ◆ Midterm Exam : 30.0 %</p> <p>◆ Final Exam : 35.0 %</p> <p>◆ Other ( ) :        %</p>
Note	<p>This syllabus may be uploaded at the website of Course Syllabus Management System at <a href="http://info.ais.tku.edu.tw/csp">http://info.ais.tku.edu.tw/csp</a> or through the link of Course Syllabus Upload posted on the home page of TKU Office of Academic Affairs at <a href="http://www.acad.tku.edu.tw/CS/main.php">http://www.acad.tku.edu.tw/CS/main.php</a> .</p> <p><b>※ Unauthorized photocopying is illegal. Using original textbooks is advised. It is a crime to improperly photocopy others' publications.</b></p>