

## Tamkang University Academic Year 110, 2nd Semester Course Syllabus

Course Title	ADVANCED BIOMEDICAL MATERIALS	Instructor	WANG SAN-LANG
Course Class	TSXAD2A DOCTORAL PROGRAM IN APPLIED SCIENCES, 2A	Details	<ul style="list-style-type: none"> <li>◆ General Course</li> <li>◆ Selective</li> <li>◆ One Semester</li> </ul>
Relevance to SDGs	SDG1 No poverty SDG3 Good health and well-being for people		
<b>Departmental Aim of Education</b>			
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.			
<b>Subject Departmental core competences</b>			
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:30.00)  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)			
<b>Subject Schoolwide essential virtues</b>			
1. A global perspective. (ratio:30.00)  3. A vision for the future. (ratio:20.00)  4. Moral integrity. (ratio:15.00)  5. Independent thinking. (ratio:35.00)			

Course Introduction	Learning more information about advanced biomedical materials by surveying published SCI papers and reporting the summarized results.
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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	enhance the ability of summarizing and presentation by paper study.	Cognitive
2	Practice oral presentation by summarizing the papers of subject related.	Cognitive

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

No.	Core Competences	Essential Virtues	Teaching Methods	Assessment
1	ABD	15	Lecture, Discussion, Publication	Testing, Report(including oral and written), Activity Participation
2	ABCD	1345	Lecture, Discussion	Testing, Discussion(including classroom and online), Report(including oral and written), Activity Participation

**Course Schedule**

Week	Date	Course Contents	Note

1	111/02/21 ~ 111/02/25	Wang SL*, Nguyen VB, Doan CT, Tran TN, Nguyen MT, Nguyen AD (2020, June 13) Production and potential applications of bioconversion of chitin and protein-containing fishery by-products into prodigiosin: A review. <i>Molecules</i> , 25(12): 2744. SCI <a href="https://www.mdpi.com/1420-3049/25/12/2744">https://www.mdpi.com/1420-3049/25/12/2744</a>	
2	111/02/28 ~ 111/03/04	Doan CT, Tran TN, Nguyen VB, Tran TD, Nguyen AD, Wang SL* (2020, May 19) Bioprocessing of squid pens waste into chitosanase by <i>Paenibacillus</i> sp. TKU047 and its application in low-molecular weight chitosan oligosaccharides production. <i>Polymers</i> , 12(5):1163. SCI <a href="https://www.mdpi.com/2073-4360/12/5/1163/pdf">https://www.mdpi.com/2073-4360/12/5/1163/pdf</a>	
3	111/03/07 ~ 111/03/11	Doan CT, Tran TN, Nguyen VB, Nguyen AD, Wang SL* (2020, Nov. 20) Utilization of seafood processing by-products for production of proteases by <i>Paenibacillus</i> sp. TKU052 and their application in biopeptides' preparation. <i>Mar. Drugs</i> , 18(11):574. SCI <a href="https://www.mdpi.com/1660-3397/18/11/574/pdf">https://www.mdpi.com/1660-3397/18/11/574/pdf</a>	
4	111/03/14 ~ 111/03/18	Student report	
5	111/03/21 ~ 111/03/25	Student report	
6	111/03/28 ~ 111/04/01	Student report	
7	111/04/04 ~ 111/04/08	Student report	
8	111/04/11 ~ 111/04/15	Student report	
9	111/04/18 ~ 111/04/22	Student report	
10	111/04/25 ~ 111/04/29	Middle test	
11	111/05/02 ~ 111/05/06	Nguyen TH, Wang SL*, Nguyen DM, Nguyen AD, Nguyen TH, Doan MD, Ngo VA, Doan CT, Kuo YH, Nguyen VB* (2021, May 24) Bioprocessing of marine chitinous wastes for the production of bioactive prodigiosin. <i>Molecules</i> , 26(11):3138. SCI <a href="https://www.mdpi.com/1420-3049/26/11/3138/pdf">https://www.mdpi.com/1420-3049/26/11/3138/pdf</a>	
12	111/05/09 ~ 111/05/13	Doan CT, Chen CL, Nguyen VB, Tran TN, Nguyen AD, Wang SL* (2021, May 04) Conversion of pectin-containing by-products to pectinases by <i>Bacillus amyloliquefaciens</i> and its applications on hydrolyzing banana peels for prebiotics production. <i>Polymers</i> , 13(09):1483. SCI doi: 10.3390/polym13091483	

13	111/05/16~ 111/05/20	Doan CT, Tran TN, Nguyen TT, Tran TPH, Nguyen VB, Tran TD, Nguyen AD, Wang SL* (2021, June 13) Production of sucrolytic enzyme by Bacillus licheniformis by the bioconversion of pomelo albedo as a carbon source. Polymers, 13(12): 1959. SCI <a href="https://www.mdpi.com/2073-4360/13/12/1959">https://www.mdpi.com/2073-4360/13/12/1959</a>	
14	111/05/23~ 111/05/27	Lee DH, Doan CT, Tran TN, Nguyen VB, Nguyen AD, Wang CL, Wang SL* (2021, August 25) Proteases production and chitin preparation from the liquid fermentation of chitinous fishery by-products by Paenibacillus elgii. Marine Drugs, 19(09):477. SCI <a href="https://www.mdpi.com/1660-3397/19/9/477">https://www.mdpi.com/1660-3397/19/9/477</a>	
15	111/05/30~ 111/06/03	Student report	
16	111/06/06~ 111/06/10	Student report	
17	111/06/13~ 111/06/17	Student report	
18	111/06/20~ 111/06/24	Final test	
Requirement	Oral presentation		
Teaching Facility	Computer		
Textbooks and Teaching Materials	The international journals of biomedical material-related.		
References			
Number of Assignment(s)	8 (Filled in by assignment instructor only)		
Grading Policy	◆ Attendance : 20.0 %    ◆ Mark of Usual :        %    ◆ Midterm Exam : 20.0 % ◆ Final Exam : 20.0 % ◆ Other <oral presentation> : 40.0 %		
Note	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> . <b>※ Unauthorized photocopying is illegal. Using original textbooks is advised. It is a crime to improperly photocopy others' publications.</b>		