

## Tamkang University Academic Year 113, 2nd Semester Course Syllabus

Course Title	BIONANOTECHNOLOGY	Instructor	LIAO, SHU-CHUAN
Course Class	TGEXB0A ELECTIVES COURSES BY COLLEGE OF ENGINEERING, 0A	Details	<ul style="list-style-type: none"> <li>◆ General Course</li> <li>◆ Selective</li> <li>◆ One Semester</li> <li>◆ 3 Credits</li> </ul>
Relevance to SDGs	SDG3 Good health and well-being for people SDG8 Decent work and economic growth 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			
Educate our undergraduate students to be successful engineers who have interdisciplinary knowledge, techniques and literacy.			
S u b j e c t   D e p a r t m e n t a l   c o r e   c o m p e t e n c e s			
A. The ability to solve engineering problems using basic information techniques and computer software.(ratio:40.00) B. The ability to recognize and treasure professional ethics.(ratio:30.00) C. The ability to learn and integrate basic knowledge of mathematics, science and engineering.(ratio:30.00)			
S u b j e c t   S c h o o l w i d e   e s s e n t i a l   v i r t u e s			
1. A global perspective. (ratio:10.00) 2. Information literacy. (ratio:10.00) 3. A vision for the future. (ratio:15.00) 4. Moral integrity. (ratio:10.00) 5. Independent thinking. (ratio:30.00) 6. A cheerful attitude and healthy lifestyle. (ratio:10.00) 7. A spirit of teamwork and dedication. (ratio:10.00) 8. A sense of aesthetic appreciation. (ratio:5.00)			

Course Introduction	<p>Bio-nanotechnology mainly explores the application of nanoscale in the medical field, combining biological and engineering-related knowledge to explore innovative applications of nanomaterials in diagnosis, treatment, and bioimaging. Students will gain an in-depth understanding of the properties of nanomaterials, and courses include topics such as nanomedicine, biomedical imaging, and drug delivery.</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	1.Introduction to biomedical nanomaterials and their biomedical applications 2.Biomedical imaging and diagnostic technology 3.Drug delivery and therapeutic applications	Cognitive

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

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

**Course Schedule**

Week	Date	Course Contents	Note
1	114/02/17 ~ 114/02/23	生物奈米科技簡介	
2	114/02/24 ~ 114/03/02	生物奈米材料介紹	
3	114/03/03 ~ 114/03/09	奈米材料在生物醫學的應用-生物相容性與毒性評估	
4	114/03/10 ~ 114/03/16	奈米材料在生物醫學的應用-生物感測器與診斷技術	

5	114/03/17 ~ 114/03/23	奈米材料在生物醫學的應用-奈米藥物與免疫療法	
6	114/03/24 ~ 114/03/30	奈米醫學影像-奈米粒子在影像學的應用	
7	114/03/31 ~ 114/04/06	教學觀摩日	
8	114/04/07 ~ 114/04/13	基因療法與奈米載體-奈米載體在基因療法中的應用	
9	114/04/14 ~ 114/04/20	Midterm Exam/Midterm Assessment Week (teachers can adjust the week as needed)	
10	114/04/21 ~ 114/04/27	藥物傳遞與治療應用-奈米技術在藥物傳遞中的應用	
11	114/04/28 ~ 114/05/04	生物奈米科技之發展及專利技術應用	
12	114/05/05 ~ 114/05/11	臨床應用與案例研究-奈米技術在臨床治療的應用	
13	114/05/12 ~ 114/05/18	生物奈米科技的未來發展趨勢&小組討論	
14	114/05/19 ~ 114/05/25	期末報告與討論(I)	
15	114/05/26 ~ 114/06/01	期末報告與討論(II)	
16	114/06/02 ~ 114/06/08	期末報告與討論(III)	
17	114/06/09 ~ 114/06/15	Final Exam/Final Assessment Week (teachers can adjust the week as needed)	
18	114/06/16 ~ 114/06/22	Flexible Teaching Week: Generally, no in-person classes; teachers may arrange teaching activities or final assessments, among other options.	
Key capabilities			
Interdisciplinary			
Distinctive teaching			
Course Content		Logical Thinking Environmental Safety	

Requirement	1.將主要以期中(讀書心得報告)及分組期末報告進行評量。 2.課堂的分組討論及個人回饋等表現可用來做學期分數加乘。
Textbooks and Teaching Materials	Self-made teaching materials:Handouts
References	
Grading Policy	◆ Attendance : 10.0 %    ◆ Mark of Usual :        %    ◆ Midterm Exam : 30.0 % ◆ Final Exam : 40.0 % ◆ Other 〈 課堂討論 〉 : 20.0 %
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>