Tamkang University Academic Year 112, 1st Semester Course Syllabus

Course Title	INTEGRATED TECHNOLOGY OF BIOMEDICAL ENGINEERING	Instructor	WANG, YU-TZU
Course Class	TEBXM1A MASTER'S PROGRAM, DEPARTMENT OF MECHANICAL AND ELECTRO-MECHANICAL ENGINEERING, 1A	Details	◆ General Course ◆ Selective ◆ One Semester
Relevance to SDGs	SDG3 Good health and well-being for people		

Departmental Aim of Education

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 competiveness 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:20.00)

B. Hand: Hands-on skills and practical realization.(ratio:30.00)

C. Heart: Love of learning and innovation.(ratio:30.00)

D. Eye: Vision of progress and improvements.(ratio:20.00)

Subject Schoolwide essential virtues

1. A global perspective. (ratio:20.00)

2. Information literacy. (ratio:20.00)

3. A vision for the future. (ratio:15.00)

4. Moral integrity. (ratio:5.00)

5. Independent thinking. (ratio:20.00)

6. A cheerful attitude and healthy lifestyle. (ratio:5.00)

7. A spirit of teamwork and dedication. (ratio:10.00)

8. A sense of aesthetic appreciation. (ratio:5.00)

Course Introduction	To train students to have basic knowledge of biomedical engineering

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	Biomedical engineering is a specialized discipline that combines engineering technology and clinical medicine in disease diagnosis or treatment to design and development medical devices. This course will explore the integration technology of this interdisciplinary research in a simple way.	Psychomotor

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	Testing, Study Assignments, Report(including oral and written)

Course Schedule

Week	Date	Course Contents	Note
1	112/09/11 ~ 112/09/17	生醫工程概論	
2	112/09/18 ~ 112/09/24	人體結構與功能	
3	112/09/25 ~ 112/10/01	臨床植入物設計概念I	

4	112/10/02～ 112/10/08	臨床植入物設計概念II	
5	112/10/09～ 112/10/15	醫療器材設計流程I	
6	112/10/16～ 112/10/22	醫療器材設計流程II	
7	112/10/23～ 112/10/29	醫學影像系統簡介	
8	112/10/30～ 112/11/05	醫學影像應用與操作	
9	112/11/06～ 112/11/12	生物力學與創新研發I	
10	112/11/13～ 112/11/19	校外人士講座課程	
11	112/11/20～ 112/11/26	生物力學與創新研發II	
12	112/11/27～ 112/12/03	牙科口腔生醫工程應用	
13	112/12/04～ 112/12/10	顱顏整形外科生醫工程應用I	
14	112/12/11～ 112/12/17	顱顏整形外科生醫工程應用II	
15	112/12/18～ 112/12/24	脊椎骨科生醫工程應用	
16	112/12/25～ 112/12/31	醫材植入物法規探討I	
17	113/01/01～ 113/01/07	醫材植入物法規探討II	
18	113/01/08～ 113/01/14	期末報告	

Key capabilities	self-directed learning
Interdisciplinary	STEAM course (S:Science, T:Technology, E:Engineering, M:Math, A field:Integration of Art and Humanist)
Distinctive teaching	USR curriculum
Course Content	Computer programming or Computer language (students have hands-on experience in related projects) Logical Thinking

Requirement	
Textbooks and Teaching Materials	Self-made teaching materials:Presentations Using teaching materials from other writers:Presentations
References	Basic Biomechanics of the Musculoskeletal System 4/e, 作者: Margareta Nordin;Victor H. Frankel Dental Biomechanics, 作者:Arturo N Natali
Grading Policy	◆ Attendance： 10.0 % ◆ Mark of Usual： % ◆ Midterm Exam： 40.0 % ◆ Final Exam： 50.0 % ◆ Other〈 〉： %
Note	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 . **※ Unauthorized photocopying is illegal. Using original textbooks is advised. It is a crime to improperly photocopy others' publications.**