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國立高雄科技大學
NATIONAL KAOHSIUNG
UNIVERSITY OF SCIENCE
AND TECHNOLOGY

授課大綱 Syllabus

部別：日間部碩士

112學年度第2學期

列印日期：2024/03/01

中文課程名稱：生醫訊號處理	英文課程名稱：Biomedical Signal Processing	授課教師：張剛鳴
開課班級：電通碩士班一甲	學分：3.0	授課時數：3.0
合班班級：電通系四甲, 電通系四乙		實習時數：0.0

1. 中文教學目標(Chinese Teaching objectives)

[1] 認識生理訊號種類 [2] 量測生理訊號 [3] 雜訊濾除、特徵萃取

2. 英文教學目標(English Teaching objectives)

[1] Biomedical signal types [2] Measure Biomedical signal [3] Filtering and feature extraction of biomedical signals

3. 中文教學綱要(Chinese CourseDescription)

Introduction commercial product and industry origin of EXG; filter design and noise filtering and Physionet database; feature extraction: EMG, ECG, EEG, EOG, Accelerometer. Eye Tracking and VR; Nonlinear Features; Introduction: Neuromarketing, affective computing, Ergonomics, AIoT on medicine and healthcare

4. 英文教學綱要(English CourseDescription)

Introduction commercial product and industry origin of EXG; filter design and noise filtering and Physionet database; feature extraction: EMG, ECG, EEG, EOG, Accelerometer. Eye Tracking and VR; Nonlinear Features; Introduction: Neuromarketing, affective computing, Ergonomics, AIoT on medicine and healthcare

5. 中文核心能力

核心能力名稱(中)	核心能力名稱(英)	核心能力百分比	備註
具備溝通管理、領導規劃、創新思考、和自我成長的能力	Possessing capability of communication and management, leadership and coordination, innovative thinking, and self-development		課程之分組討論、期末專題報告。
具備專業論文撰寫的能力	Possessing capability of writing research articles		論文撰寫。
具備蒐集與評述國際間文獻的能力	Possessing capability of collection and review of international research literature		論文撰寫。
具備策劃及執行專題研究的能力	Possessing capability to propose and implement research projects		獨立做研究，從規劃到執行。
具備電腦、通訊和多媒體的專業知識	Possessing professional knowledge in computer and		專精一個領域，並了解另一個領域。

communication
engineering, and
multimedia

具備工程人員的進階知識：
語文、數理及研究方法

Possessing advanced
knowledge of an engineer
in language arts,
mathematics, and research
methodology

英文專業論文閱讀。

無英文核心能力資料。

7. 教科書

中文書名：教師自編材料 英文書名：Teacher edited materials

中文作者： 英文作者：

1 中文出版社： 英文出版社：

出版日期：年 月 備註：

8. 參考書

中文書名： 英文書名：Advanced Methods in Biomedical Signal Processing and Analysis

中文作者： 英文作者：Kunal Pal, Samit Ari, Arindam Bit, Saugat Bhattacharyya

1 中文出版社： 英文出版社：ISBN: 9780323859554

出版日期：2022年 07月 備註：

9. 教學進度表

週次或項目 Week or Items	中文授課內容 Chinese Course Content	英文授課內容 English Course Content	分配節次 Assigned Classes	備註 Note
1	Introduction commercial product and industry	Introduction commercial product and industry	3	
2	origin of EXG	origin of EXG	3	
3	filter design and noise filtering and Physionet database	filter design and noise filtering and Physionet database	3	
4	feature extraction:	feature extraction:	3	
5-6	EEG	EEG	6	
7-8	ECG	ECG	3	
10	EOG	EOG	3	
11	OpenBCI EEG	OpenBCI EEG	3	
12	Accelerometer: body posture experiment	Accelerometer: body posture experiment	3	
13	Eye Tracking and VR	Eye Tracking and VR	3	
14	Pulse and Emobit data	Pulse and Emobit data	3	

15	Wavelet and HHT analysis for feature extraction	Wavelet and HHT analysis for feature extraction	3
16	Nonlinear Features	Nonlinear Features	3
17	Introduction: Neuromarketing, affective computing, Ergonomics, AIoT on medicine and healthcare	Introduction: Neuromarketing, affective computing, Ergonomics, AIoT on medicine and healthcare	3

10. 中文成績評定(Chinese Evaluation method)

課程量測報告: 50% 課前閱讀與課間參與回答 10% 期中報告 20% 期末分析報告 20%

11. 英文成績評定(English Evaluation method)

Biomedical signal measurement 50% Attendance 10% Mid-term proposal 20% Final report 20%

12. 中文課堂要求(Chinese Classroom requirements)

[1] 課前事先閱讀教材 [2] 每周實際量測一種生理訊號 [3] 論文閱讀報告 [4] 程式撰寫與生理訊號分析

13. 英文課堂要求(English Classroom requirements)

1. Read teaching materials. 2. Measure biomedical signals 3. Read articles 4. Programming and feature extraction of biomedical signal.

14. 本課程與SDGs相關項目(This course is relevant to these of SDGs as following)

3. 良好健康和福祉(Good Health and Well Being); 4. 優質教育(Quality Education);

「遵守智慧財產權」；「不得非法影印」！