

人體生理訊號記錄方法(Recording Methods of Human Physiology) 3155507

115 學年第一學期教學大綱

課程時間：週二 09:10-12:00

地點：432室

授課老師：蔡玲玲 (32201; psyllt@ccu.edu.tw)

教學目標：介紹體表記錄(surface recording)生理訊號、放大器及感測器原理；實作練習以做為應用相關技術進行研究之基礎。

課程核心能力：進階學識、研究技能、專業倫理與操守、應用

課程要求：筆試 30%、課堂討論與實作表現 30%、主題研究應用期末報告 40%

授課大綱：

日期	主題	Psychophysiological Recording 章節
9/8	Neurons and Muscles: Biopotentials	2
9/15	Electrodes and Biopotential Amplifiers	3
9/22	Transducers	3
9/29	Psychophysiological Status and Recordings Safety AND Ethics	4-6
10/6	Introduction to PowerLab, LabTutor, and LabChart	PowerLab/LabChart 手冊
10/13	Electromyography and Force	8
10/20	Electrooculography, Electroencephalography I	9, 7
10/27	Electroencephalography II	7
11/03	Electroencephalography III	7
11/10	Electrocardiography and Cardiovascular Function I	12
11/17	Electrocardiography and Cardiovascular Function II	12
11/24	Respiratory Function	10
12/01	Electrogastrography	11
12/8	Electrodermal Activity	13
12/15	Signal Processing, Artifacts, and Troubleshoots 問題討論與復習	14
12/22	筆試、主題研究應用問題討論	
12/29	主題研究應用口頭報告	
1/5	書面報告繳交截止日	

**主題研究應用報告：擇一研究文獻，參考其研究方法設計新實驗、以同學為實驗測試對象收集至少一份實驗資料並分析討論。研究方法需應用在本課程習得之生理訊號紀錄技術至少兩項。

口頭報告：20 分鐘。著重研究方法、資料收集與分析討論。

書面報告：含題目、摘要、實驗目的、實驗設計與程序、資料分析與結果、討論、參考文獻。上傳至 eCourse2 時另需檢附 LabChart 紀錄檔、資料分析檔。

參考資料：(請尊重智慧財產權，不得非法影印教師指定之教科書籍)

Robert M. Stern, William J. Ray, Karen S. Quigley. Psychophysiological Recording. Oxford University Press, USA; 2 edition (December 21, 2000) 本校圖書館藏

Tatsuo Tagawa, Toshiyo Tamura, P. Ake Oberg. Biomedical Sensors and Instruments. CRC Press; 2 edition (March 22, 2011) 本校圖書館藏

Cheryl L L Dickter, Paul D D Kieffaber. EEG Methods for the Psychological Sciences. SAGE Publications Ltd; 2014

eCourse2 教學平台本課程網頁參考資料區：

指定閱讀期刊論文：

Henriksen A, Haugen Mikalsen M, Woldaregay AZ, Muzny M, Hartvigsen G, Hopstock LA, Grimsgaard S. Using Fitness Trackers and Smartwatches to Measure Physical Activity in Research: Analysis of Consumer Wrist-Worn Wearables. J Med Internet Res. 2018 Mar 22;20(3):e110. doi: 10.2196/jmir.9157.

Rodin D, Kirby M, Sedogin N, Shapiro Y, Pinhasov A, Kreinin A. Comparative accuracy of optical sensor-based wearable system for non-invasive measurement of blood glucose concentration. Clin Biochem. 2019 Mar;65:15-20. doi: 10.1016/j.clinbiochem.2018.12.014.

Scheeren TWL, Ramsay MAE. New Developments in Hemodynamic Monitoring. J Cardiothorac Vasc Anesth. 2019 Aug;33 Suppl 1:S67-S72. doi: 10.1053/j.jvca.2019.03.043.

Wolpert N, Rebollo I, Tallon-Baudry C. Electrogastrography for psychophysiological research: Practical considerations, analysis pipeline, and normative data in a large sample. Psychophysiology. 2020 Sep;57(9):e13599. doi: 10.1111/psyp.13599.

Meidert AS, Saugel B. Techniques for Non-Invasive Monitoring of Arterial Blood Pressure. Front Med (Lausanne). 2018 Jan 8;4:231. doi: 10.3389/fmed.2017.00231.

生理訊號紀錄儀器使用手冊