

課程名稱：BMES525400 幹細胞組織工程

學分數：3

時間：Wednesday 2, 3, 4

地點：醫環系 R517

授課老師：張建文 (C.W. Chang)

助教：

學習目標：本課程的教學目標在於使修課同學能對當代組織工程發展取得深入的認識，因此在課程內容將涵蓋三大部分，包括：(1) 幹細胞生物學、(2) 組織工程相關材料與技術、(3) 幹細胞、組織工程應用實例。為了涵蓋組織工程的理論基礎與實際應用。

課程內容：

Date	Topic
L1	Introduction
L2	Basics of Stem Cell biology Tissue Organization/dynamics
L3	Embryonic stem cell: Self Renewal
L4	Embryonic stem cell: Differentiation
L5	Adult stem cell: Source and differentiation
L6	Extracellular microenvironment-stem cell interactions
L7	<u>Biomaterials I</u> : Micro-scale cell patterning/cell interactions with polymers
L8	<u>Biomaterials II</u> : Matrix effects/Polymer scaffold fabrication/biodegradable polymers
期中考	
L9	<u>Biomaterials III</u> : Micro-and Nanofabricated scaffolds/Three-dimensional scaffolds
L10	Gene therapy I for stem cell
L11	Gene therapy II for tissue engineering
L12	Cardiovascular tissue engineering
L13	Musculoskeletal tissue engineering
L14	Stem cell Applications on Musculoskeletal system tissue engineering
L15	Skin tissue engineering

上課參考資料：

1. Principle of Tissue Engineering, 3rd edition Edited by Robert Lanza, Robert Langer and Joseph Vancanti, Academic Press. (The electronic copy is available from NTHU library)
2. Tissue Engineering, Bernhard ø. Palsson and Sangeeta N. Bhatia.
3. Journal papers

評分標準

上課參與 10%

口頭專題報告 20%

書面專題報告 20%

期中考 50%