

國立中興大學 通識課程 教學大綱

Syllabus of NCHU General Education Course

課程名稱 course name	先進智慧微創醫材				
	Advanced Basic Minimally Invasive Surgery Device				
開課系所班級 dept. & grade	通識教育中心 General Education Center	學分 credits	3	規劃教師 teacher	醫工所 張健忠
課程屬性 course type	必修 compulsory	授課語言 language	中文或英文 Chinese/English	開課學期 semester	上或下 fall or spring
課程分類 course classification	109 學年度前入學新生適用		自然領域－工程科技學群		
	110 學年度起入學新生適用		統合領域－專業實作		
課程簡述 course description	<p>微創醫療的概念是利用微型器材通過極小傷口執行手術，這些器材包括剪切器械、導引裝置(導管)、管腔照明裝置、顯影藥劑與器械等。最具代表性的設備即為達文西手術機器人，這種造價上億的器械可以減少病人創傷程度以顯著縮短住院時間，為當今醫療科技發展的主要方向之一。本課程專門設計給具有醫療、工程、或商業興趣，對醫材創新有熱忱的學生。希望藉由科技創新來改善病人的醫療照護品質。內容包括：傳統手術到微創手術、內視鏡到微創的演進與相關法規、智慧醫療、醫院參觀與臨場體驗等課程。</p> <p>The concept of minimally invasive medicine is to use micro-devices to perform surgeries through extremely small wounds. These devices include shearing instruments, guiding devices (catheters), lumen lighting devices, developing agents and instruments, etc. The most representative device is the Da Vinci surgical robot. This instrument, which costs hundreds of millions, can reduce patient trauma and significantly shorten hospitalization time. It is one of the main directions in the development of medical technology today. This course is specifically designed for students with medical, engineering, or business interests and a passion for medical material innovation. We hope to improve the quality of medical care for patients through technological innovation. The content includes: the evolution from traditional surgery to minimally invasive surgery, endoscopy to minimally invasive surgery and related regulations, smart medical care, hospital visits and on-site experience courses.</p>				
教學目標 course objectives	<p>本課程目標為讓學生了解微創醫材原理，包括顯影劑開發、生物感測開發、顯影光源、3D 影像擷取與重建的軟硬體技術、光動力與光熱治療技術開發、產業服務與產學合作之前景。目的是使學生可以投入高微創醫材研發並轉化智財於醫療產業應用之人材培育</p>				

The goal of this course is to allow students to understand the principles of minimally invasive medical materials, including development of biomarker (probe), biosensor and light sources. The soft-hardware technologies for 3D image capture and reconstruction, photodynamic and photothermal technology, services and respects for industry-university cooperation. The purpose is to enable students to invest in the research and development of highly minimally invasive medical materials and transform their intellectual property into the cultivation of talents for application in the medical industry.

先修課程 prerequisites
無 None

**六項核心能力配比 (加總為 100%)
The 6 core learning outcomes add up to 100%**

人文素養	科學素養	溝通能力	創新能力	國際視野	社會關懷
10%	20%	30%	20%	10%	10%
Humanities Literacy	Scientific Literacy	Communication Skills	Innovative Ability	International Perspective	Social Concerns

教學方法 teaching methods

學習評量方式 evaluation

課堂講授、實地場域參訪
Lectures and Visiting

出席率 Attendance 5%
課堂作業或報告 Homework or Reports of Lectures 75%
實地場域參訪 Visiting 20%

**授課內容 (單元名稱與內容、習作/考試進度)
course contents and homework/tests schedule**

週次	講題
1-2	醫療器材臨床前試驗
3-4	內視鏡手術之過去、現在與未來
5-6	微創手術檢體之病理學評估 Part 1 實驗室病理檢體之處理及品質管理微創手術檢體之病理學評估
7-8	Part 2 數位病理、遠距醫療、人工智慧及精準醫學之發展與應用
9-10	醫療法規導論
11-12	微創醫材應用
13-14	智慧醫療的進展
15-16	骨折創傷微創與醫材
17	醫院智慧病房 醫院微創中心參訪
18	人類疾病動物模式之發展與應用

教科書與參考書目（書名、作者、書局/代理商…）

textbooks & other references (title, author, publisher...)

1. 外科微創手術圖譜。作者：臺大醫院外科部。出版社：國立臺灣大學醫學院
2. 微創醫材市場分析。作者：蔡潔娃、劉文海。金屬工業研究發展中心、經濟部技術處。出版社：金屬中心出版、經濟部技術處發行

課程教材（教師個人網址請列在本校內之網址）

teaching aids & teacher's website

<https://sites.google.com/site/ccchanggroup/home>

課程輔導時間

office hours

另行公告