國立台灣科技大學新開課程計畫書

<table>
<tr><td>1.</td><td>開課所系
Department</td><td colspan="3">資訊工程系</td><td colspan="2">100學年度第 二 學期
Year: 100 Semester: Spring
其他：
Other time:</td></tr>
<tr><td rowspan="3">2.</td><td>課程代號
Course Code</td><td>CS5117</td><td>選必修
Required/
Elective</td><td>選修</td><td>開課年級
Grade</td><td>大四、研究所</td></tr>
<tr><td rowspan="2">課程名稱
Course Title</td><td colspan="5">中文(Chinese) 計算攝影學 （中文15個字以內）</td></tr>
<tr><td colspan="5">英文(English) Computational Photography （英文75個字母以內）</td></tr>
<tr><td>3.</td><td>學分數
Credits</td><td>3</td><td colspan="2">上課時數
Total Hours</td><td>3</td><td>實習時數
Intern Hours</td></tr>
<tr><td>4.</td><td>通識課程領域別
Type of General Education Course
(若屬通識課程請勾選)
(Please select this item of G/E course.)</td><td colspan="2">□人文領域
Humanity</td><td colspan="2">□社會領域
Sociology</td><td>□自然領域
Nature</td></tr>
<tr><td>5.</td><td>先修課程或特殊規定
Pre-Requisite</td><td colspan="6">Programming experience and familiarity with linear algebra and calculus is assumed. Some background in computer graphics, computer vision, or image processing is helpful.</td></tr>
<tr><td>6.</td><td>課程宗旨
Purpose of The Course</td><td colspan="6">Computational Photography is an emerging new field created by the convergence of computer graphics, computer vision and photography. Its role is to overcome the limitations of the traditional camera by using computational techniques to produce a richer, more vivid, perhaps more perceptually meaningful representation of our visual world.

The aim of this course is to study ways in which samples from the real world (images and video) can be used to generate compelling computer graphics imagery. We will learn how to acquire, represent, and render scenes from digitized photographs. Several popular image-based algorithms will be presented, with an emphasis on using these techniques to build practical systems. This hands-on emphasis will be reflected in the programming assignments, in which students will have the opportunity to acquire their own images of indoor and outdoor scenes and develop the image analysis and synthesis tools needed to render and view the scenes on the computer.</td></tr>
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7.	課程中文大綱 Outline of Lectures (In Chinese)	(1) 照相機與影像形成 (2) 視覺感知 (3) 圖像和視頻處理 (4) 圖像處理 (5) 使用大量數據建模和合成 (6) 高動態範圍成像和色調映射 (7) 基於圖像的照明 (8) 基於圖像的繪製 (9) 非真實感繪製 （本案經教務會議通過後，將轉錄此段課程概述於本校概況及各系課程英文大綱上，敬請詳實填列）
8.	課程英文大綱 Outline of Lectures (In English)	(1) Cameras, Image Formation (2) Visual Perception (3) Image and Video Processing (4) Image Manipulation (5) Modeling and Synthesis using Lots of Data (6) High Dynamic Range Imaging and Tone Mapping (7) Image-Based Lighting (8) Image-Based Rendering (9) Non-photorealistic Rendering （本案經教務會議通過後，將轉錄此段課程概述於本校概況及各系課程英文大綱上，敬請詳實填列）
9.	校內有否開設類似課程 Similar Course In Campus	☑ 否 No ☐ 有，其課程名稱為： Yes(Please specify course title):
10.	任課教師 Lecturer	花凱龍(Hua, Kai-Lung)

所　　長：
系（科）主任：
學程主任：＿＿＿＿＿＿　院　長：＿＿＿＿＿＿　日 期：＿＿＿＿＿＿

系務會議決議 ：：100.12.6資工系100學年度第7次系務會議通過　　教務會議決議：＿＿＿＿＿＿＿＿