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## THE CHINESE UNIVERSITY OF HONG KONG Print Course Catalog Details

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### Academic Org: Div of Computer Science & Engg - Subject: Courses offered by Fac of Erg

Course: ENGG5104	Course ID: 011157	Eff Date: 2024-07-01	Crse Status: Active	Apprv. Status: Approved	[New Course]
Image Processing and Computer Vision 圖像處理及計算機視覺					

This course will cover fundamental knowledge and advanced topics in image processing and computer vision, including feature detection, segmentation, motion estimation, panorama construction, 3D reconstruction, scene detection and classification, color image processing and restoration. Applications in computer graphics will also be introduced, including image transformation, and camera

calibration. Basic concepts of related algorithms and mathematic background will be discussed.

## 本科將會介紹圖像處理和計算機視覺基礎知識和進階主題,包括特徵檢測,圖像分割,運動估計,全景圖構建,三維重搆,場景識別和分類,彩色圖像處理和恢復。本科也將 會概觀介紹計算機視覺技術在圖形學的應用,包括圖像變換相機標定。本科會討論相關算法的基本概念和數學背景。

#### Grade Descriptor: A

EXCELLENT – exceptionally good performance and far exceeding expectation in all or most of the course learning outcomes; demonstration of superior understanding of the subject matter, the ability to analyze problems and apply extensive knowledge, and skillful use of concepts and materials to derive proper solutions.

有關等級說明的資料,請參閱英文版本。

B+

В

GOOD – good performance in all course learning outcomes and exceeding expectation in some of them; demonstration of good understanding of the subject matter and the ability to use proper concepts and materials to solve most of the problems encountered.

## 有關等級說明的資料,請參閱英文版本。

С

FAIR – adequate performance and meeting expectation in all course learning outcomes; demonstration of adequate understanding of the subject matter and the ability to solve simple problems.

### 有關等級說明的資料,請參閱英文版本。

D

MARGINAL – performance barely meets the expectation in the essential course learning outcomes; demonstration of partial understanding of the subject matter and the ability to solve simple problems.

## 有關等級說明的資料,請參閱英文版本。

F

FAILURE – performance does not meet the expectation in the essential course learning outcomes; demonstration of serious deficiencies and the need to retake the course.

#### 有關等級說明的資料,請參閱英文版本。

Equivalent Offering:	
Units:	3 (Min) / 3 (Max) / 3 (Acad Progress)
Grading Basis:	Graded
Repeat for Credit:	Ν
Multiple Enroll:	Ν

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Course Attributes:	MSc Computer Science MPhil-PhD Computer Sci & Erg MPhil-PhD Electronic Erg MPhil-PhD Info Engineering MPhil-PhD Mechan & Auto Erg MPhil-PhD System Erg & Erg Mgt MPhil-PhD Information Engineering MPhil-PhD Biomedical Engineering			
Topics:				
	COURSE OUTCOMES			
Learning Outcomes:	At the end of the course of studies, students will have acquired the ability to 1. Understand basic knowledge and algorithms in computer vision. 2. Use Matlab in computer vision programming. 3. Perform image transformation in the color and spatial domains.			
Course Syllabus:	This course will cover fundamental knowledge and advanced topics in image processing and computer vision, including feature detection, segmentation, motion estimation, panorama construction, 3D reconstruction, scene detection and classification, color image processing and restoration. Applications in computer graphics will also be introduced, including image transformation, and camera calibration. Basic concepts of related algorithms and mathematic background will be discussed.			
Assessment Type:	Essay test or exam: 25%Others: 75%			
Feedback for Evaluation:	<ol> <li>Quiz and examinations</li> <li>Course evaluation and questionnaire</li> <li>Reflection of teachers</li> <li>Question-and-answer sessions during class</li> <li>Student consultation during office hours or online</li> </ol>			

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Required Readings:	To be provided by course teacher.				
Recommended Readings:	<ol> <li>Computer Vision: A Modern Approach, 2nd Edition, Forsyth &amp; Ponce, Pearson, 2011.</li> <li>Digital Image Processing, 3rd Edition, Gonzalez and Woods, Prentice Hall, 2008.</li> <li>Multiple View Geometry in Computer Vision, 2nd Edition, Richard Hartley and Andrew Zisserman, Cambridge University Press, March 2004.</li> </ol>	/			
	OFFERINGS				
1. ENGG5104	Acad Organization=CSEGV; Acad Career=RPG				
	COMPONENTS				
	TUT : Size=30; Final Exam=N; Contact=1				
	ENROLMENT REQUIREMENTS				
1. ENGG5104	Enrollment Requirement Group: For students in MSc Computer Science or MPhil-PhD programmes under Faculty of Engineering or UG Computer S or UG Computer Engineering; Not for students who have taken CMSC5711 or CSCI5280	Science			
Additional Information					
VTL-Onsite face- VTL-Online synch VTL-Online async	to-face hrs 0 h. hrs 0 ch. hrs 0				

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