PHYS8701 Physics Experimental Techniques	
Offering Department	Physics
Course Co-ordinator	Prof M H Xie, Physics < mhxie@hku.hk >
Teachers Involved	Prof M H Xie, Physics Prof A B Djurisic, Physics Prof X D Cui, Physics Prof J Gao, Physics Prof S J Xu, Physics Dr J H C Lee, Physics Dr F C C Ling, Physics Dr Y Tu, Physics Dr Y F Chan, Electron Microscope Unit
Course Objectives	This course provides a detailed account of some common experimental techniques in physics research. It introduces the basic working principles, the operational knowhow, and the strength and limitations of the techniques.
Course Contents & Topics	This course will discuss and train students of the following techniques: 1. Scanning Probe Microscopy (STM and AFM) 2. Vacuum technology and deposition techniques 3. Raman spectroscopy and photoluminescence 4. Electrical and magnetic characterization 5. Transmission Electron Microscopy (TEM) 6. Noise, Data Analysis, and Computer Grid 7. Photoelectron Spectroscopy 8. Scanning Electron Microscopy (SEM) 9. X-Ray and electron diffraction methods 10. Nuclear method in physics
Course Learning Outcomes	Upon completion, students should be able to: 1. describe and explain the working principles of the various techniques 2. identify the strength and limitation of each technique, therefore, choose

	the right technique for characterization of properties 3. know the operational details and interpret the data obtained by the techniques		
Pre-requisites (and Co-requisites and Impermissible combination)	NIL		
Offer in 2016 - 2017	Y 2nd sem	Examination	To be confirmed
Offer in 2017 - 2018	Y		
Course Grade	Pass/Fail		

Grade Descriptors

Pass	Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills. Apply highly effective lab skills and techniques. Critical use of data and results to draw appropriate and insightful conclusions.
Fail	Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.

Course Type	Lecture-based elective course	

Course Teaching & Learning Activities

Activities	**Details**	**No. of Hours**
Lectures		32
Demonstrations of some selective techniques		8

Assessment Methods and Weighting

Methods	**Details**	**Weighting in final course grade (%)**

	Presentation		50
	In class quizzes		50
Required/recommended reading and online materials	NIL		
Additional Course Information	NIL		