The 4th Teaching & Learning Symposium

Engaging Undergraduates in RESEARCH and INQUIRY: A Scholarly Dialogue

PHYS 191/291/391: Directed Studies in Physics I/II/III
PHYS 398: Independent Study Project

Course Coordinator:

PHYS 191/291/391:

Prof Kam Sing WONG, *Professor, Physics, HKUST*

PHYS 398:

Prof Zhaoqing ZHANG, *Professor, Physics, HKUST*

Members in Spring 2011:

PHYS 191/291/391:

Prof Kwok Kwong FUNG Prof Kwok Yip SZETO
Prof Rolf Walter LORTZ Prof Michael WONG

PHYS 398:

Prof Kwok Yip SZETO Prof Michael WONG
Prof Tian Wen CHEN Prof Kwok Kwong FUNG
Prof Tai Kai NG Prof Rolf Walter LORTZ
Prof Chi Wai LAI

Project/Course Objectives

At the conclusion of the courses, students should be able to:

1. Acquire new skills (either experimental, computational or analytical) to learn and investigate non-text book problems at undergraduate level for research projects.
2. Gather and analyze information relevant to the studied topic by themselves for review topics with minimal supervision.
3. Write brief reports and give short oral presentations.

Inquiry Based Learning Activities

- Students joined research groups to investigate some non-text book problems mutually agreed between individual students and professors.
- Students gathered and analyzed relevant information, and read the relevant literature to acquire background knowledge.
- Students performed experimental, computational or analytical work on the problem.
- Progress was presented in the regular group meetings, where other group members could make suggestions on how to solve certain research problems or how to proceed further.
- They had to write up reports at the end and give short oral presentations to demonstrate their learning.

How did you assess the effectiveness of students' learning?

1) A written report and 2) a 15-minute presentation of the studied or research topic were required. Overall course grade was determined in part, by criteria such as i) the clarity and organization of the report and presentation, ii) the ability to summarize concisely the key findings/results of the research findings or studied topic, and iii) the performance and attitude of the student throughout the project duration.

What were the major outcomes of this project/course? Do they match with your objectives?

A considerable number of students became interested in research and decided to pursue post-graduate studies in Hong Kong and overseas, some entered renowned universities in the world.

Several students with excellent research results attended the Canadian Undergraduate Research Conference in Canada.

Some research results of the students were presented in journal papers.

The best-performing students are given the Paul and May Chu Research Award each year.