Summary of Sharing Session for OBE Pilot Project Instructors (Fall 2009)

On 29 September 2009, 12:00 at Room 6425

Participants:	ACKERSON, Bruce	(Consultant, SSCI)
	CHENG, Shiu Yuen	(DSCI)
	NOAKES, Nicholas S.	(Director, CELT)
	LAM, Otis Y.M.	(CELT)
	QI, Robert Z.	(BICH, Pilot course instructor)
	CHOW, King Lau	(SSCI OBE Rep./BIOL, Pilot course instructor)
	XIE, Yong	(BIOL, Pilot course instructor)
	WANG, Wenxiong	(BIOL, Pilot course instructor)
	LAU, Stanley C.K.	(BIOL, Pilot course instructor)
	KO, Ice W.P.	(BIOL, Pilot course instructor)
	YU, Lan .	(BIOL)
	LIN, Zhenyang	(CHEM, Pilot course instructor)
	MU, Mo	(MATH, Pilot course instructor)
	LORTZ, Rolf Walter	(PHYS, Pilot course instructor)
	DU, Shengwang	(PHYS, Pilot course instructor)
	WONG, George K.L.	(PHYS, Pilot course instructor)
	FOREMAN, Bradley A.	(PHYS, Pilot course instructor)
	Wong, Michael K.Y.	(PHYS)
	LAM, Williamson W.K.	(OBE Team, DSCIO)
	FUNG, Miranda T.Y.	(OBE Team, DSCIO)

Sharing on experience of implementing OBE

- ***Developing rubrics for assessing Final Year Projects (FYP)***

  Dr. Ice Ko (BIOL), who is currently the course coordinator of the courses *BIOL396-398 Project Research I/II/III*, was invited to share her experience of developing a rubric for assessing research projects with CELT's help. Different departments also shared their current practices of similar courses and their arrangements for assessing the projects, where grading basically relied on the professional judgment of individual supervisors with reference to their own assessment criteria. It seemed that departments were satisfied with the current practices. However, they generally admitted that rubrics could make grading more standardized; in addition, rubrics could present clearer messages to students in terms of the teachers' expectations.

  As a follow-up on the above, the draft rubric from Dr. Ice Ko was sent to all pilot course instructors (Fall 2009) and participants for their information. Also, the School OBE Team planned to approach the course coordinators of the FYP courses in the remaining

departments, seeing if they would be interested in developing their own rubrics for assessing the projects, and necessary support could be given to them accordingly.

- ***Sharing on course design***

  Prof. Rolf Lortz (PHYS) was invited to share the course design of the course *PHYS121 Fundamentals of Physics* for helping students achieve the course intended learning outcomes (ILOs) (please refer to Appendix I). The course design of the course *BISC314 Tumor Biology*, which was developed by Dr. Hung S.C (BIOL), was also shared at the sharing session (please refer to Appendix II).

- ***Sharing on teaching and learning***

  In terms of teaching, some instructors commented that they did not find much difference after implementing OBE, whereas some said that this approach might help teachers, especially for the junior ones, reflect on their own teaching, self-evaluating if their teaching did address the course ILOs. Some instructors also shared that under OBE, they tended to be more aware of going through the ILOs with students throughout the course. After all, instructors agreed that the stating of course ILOs might help students get clearer messages in terms of the expectations of the course.

The sharing session was closed at 13:15.

Appendix I

Practices for Sharing

Course: PHYS121 Fundamentals of Physics
Instructor: Prof. Shengwang Du & Prof. Rolf W. Lortz
Class size: 50 + 40
Semester: Fall 2009

Key OBE Features of the Course

- The course outline states clearly the course **intended learning outcomes (ILOs)** to specify what the teacher expects students to achieve by the end of the course. Apart from the course ILOs, another set of **detailed ILOs related to the key topics covered** are provided as well. This not only ensures the alignment between the course content and the ILOs, but also reminds students of the course focus, i.e. on the application of knowledge instead of simply memorizing it.
- **Various learning and assessment tasks are used** to maximize the learning opportunities of the students for achieving the ILOs; these include the use of the Personal Response System (PRS), quiz, homework, lab work, midterm exam and final exam.
- **The weekly submitted homework (i.e. the problems sheets)** requires students to manage their own learning to complete the tasks on time, which creates a learning environment for students to develop their time-management skills.
- The **Personal Response System (PRS)** is utilized to increase the active involvement of the students in class, which contributes 2% to their final grade of the course.

Quick Information on OBE – How to measure student performance?

- In OBE, assessment tasks are to provide evidence on how well the ILOs have been achieved
  - the assessment tasks chosen should be aligned with the ILOs on the basis of the action verbs involved
  - a student's grade is determined by how well the ILOs have been achieved
- Criterion-referenced assessment (CRA) is therefore used, where levels of performance on the assessment criteria determine the student's grade
  - the ILOs supply the assessment criteria for the assessment tasks

Adopted from: Designing Teaching/Learning Activities and Assessments to Align with Intended Learning Outcomes http://celt.ust.hk/obe/links/references/plenary.ppt

Course Outline – PHYS121 Fundamentals of Physics

PHYS 121
Fundamentals of Physics

Instructors

Prof. Shengwang DU
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Office Hours: By appointment
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Prof. Penger TONG (for Lab)
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IA & TAs (L : Lecture, T : Tutorial, LA : Lab)

Name	Phone	Office	Email	Section
ZENG Zheng (IA)			zengzh@ust.hk	T1 & LA1
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ZHENG Yuan (TA)			guaicha123@yahoo.com.cn	LA3
ZHU Chao (TA)			ehskywalker@163.com	LA4

Schedule
Lecture 1 (L1), Rm 1505, Tue & Thu 16:30 – 17:50
Lecture 2 (L2), Rm 3006, Wed & Fri 16:30 – 17:50

Tutorial 1 (T1), Rm 4505, Thu 13:30 – 14:20
Tutorial 2 (T2), Rm 2304, Thu 13:30 – 14:20
Tutorial 3 (T3), Rm 2504, Thu 13:30 – 14:20

Lab1 (LA1), Rm6137, Tue 9:00-10:50
Lab2 (LA2), Rm6137, Wed 13:30-15:20
Lab3 (LA3), Rm6137, Tue 13:30-15:20
Lab4 (LA4), Rm6137, Thu 10:00-11:50

For lab sessions 1, 2, 3 and 4, please see the following website for details:
http://teaching.phys.ust.hk/general_phys_two_lab/

(please turn over)

Course Description

This course is meant to give an introductory survey on the fields of electromagnetism and thermodynamics.

Electromagnetism is the study of electric charges, at rest and in motion. The electromagnetic force holds atoms, molecules and materials together and plays a vital role in our understanding of almost all existing and potential technological developments. The first part of this course surveys the phenomena associated with electrostatics (charges at rest) and magnetostatics (the magnetic effects associated with steady currents). It introduces and develops the use of the electric and magnetic field vectors and relates them by considering electromagnetic induction at a classical level. The connection between these fields and conventional circuit parameters R, C and L is developed, together with the techniques to deal with elementary transient phenomena. Maxwell's equations will be developed systematically, starting from the force between two charged particles.

Thermodynamics is the study of the conversion of energy into work and heat and its relation to macroscopic variables such as temperature and pressure. Its underpinnings are based upon statistical predictions of the collective motion of particles from their microscopic behaviour. The second part of this course aims at developing a basic understanding in elementary concepts of thermodynamics, such as the laws of thermodynamics, property relationships and equilibrium of thermodynamic systems.

Intended Learning Outcomes

After completing this course the students should be able to:

- Perform simple calculations by applying the basic concepts of electromagnetism and thermodynamics.
- Classify the nature of electric and magnetic fields, which occur in numerous applications in industry and technology, as well as and in every day's life.
- Describe and apply the energy conservation law.
- Conduct simple experiments in a teamwork environment, analyse and compare data with literature data, and present experimental results in form of a simple scientific report.

In detail, the students will learn in this course to:

- Apply Coulomb's law to situations involving point charges and demonstrate an understanding of electric fields and their effects on charged objects.
- Use Gauss' law and Coulomb's law as complementary ways to describe the relation between electric charge and electric fields in static situations.
- Calculate the electric potential and apply the concept of electric potential energy and potential difference to common situations.
- Apply Ohm's law and Kirchhoff's law to simple electronic circuits.
- Describe the nature of magnetic fields and magnetic forces in their own words.
- Apply the concept of magnetic induction and apply Faraday's law Lenz's law to solve simple problems.
- State Maxwell's equations and recognize how they unify the concepts of electromagnetism.
- Explain in their own words how electromagnetic waves propagate through space.
- Describe the equilibrium of a thermodynamic system.
- State the laws of thermodynamics.
- Qualitatively derive thermodynamic relations from statistical predictions of the collective motion of particles within the kinetic theory.
- Use the ideal gas laws and associated relationships to calculate properties of thermodynamic systems.
- Identify thermodynamic cycles and apply the principle to a heat engine.
- Make scientific observations and measurements, present the data by means of graphs and tables, and perform error analysis.

Students are required to meet deadlines for completion of problems sheets and must therefore develop appropriate time-management strategies. They need to manage their own learning and make appropriate use of support material.

Content:

I: Coulomb's law and the Electric Field
II: The Electric Potential
III: Capacitors and Capacitance
IV: Ohm's Law
V: Circuit Theory
VI: Magnetic Force
VII: Current-Produced Magnetic Fields
VIII: Inductance
IX: Alternating Fields and Currents
X: Maxwell's Equations, Models of Magnetism
XI: Nature of Electromagnetic Waves
XII: The First Law of Thermodynamics
XIII: Kinetic Theory
XIV: The Second Law of Thermodynamics

Textbook

"Fundamentals of Physics" by Halliday, Resnick and Walker, 8th Edition, Wiley (2007).

Grading Scheme

PRS	Class participations. 2 mark for correct answer, 1 for incorrect answer, and 0 for no response.	2%
Quiz	At the beginning of every other tutorial.	8%
Homework	Weekly. Due Tuesday for Lecture 1 and Wednesday for Lecture 2 at begin of the lecture at 4:30pm.	10%
Lab	http://teaching.phys.ust.hk/general_phys_two_lab/	25%
Midterm Exam	will be fixed around the middle of the semester	25%
Final Exam	at the end of the semester and covers the whole course, but with emphasis on topics since midterm	30%

Course Web Site

http://teaching.phys.ust.hk/phys121

Academic Integrity

All students are committed to the HKUST Academic Honor Code (http://www.ust.hk/vpaao/integrity/honor.html). Plagiarism will be dealt with according to the university policies (http://www.ust.hk/vpaao/integrity).

Appendix II

Practices for Sharing

Course: BISC314 Tumor Biology
Instructor: Dr. Eugene S. C. Hung
Class size: 54
Semester: Spring 2009

Key OBE Features of the Course

- The course outline states clearly the course **intended learning outcomes (ILOs)** to specify what the teacher expects students to achieve by the end of the course. More importantly, each **learning activity and assessment method is specified with the ILO(s) focused**.
- The ILOs not only focus on the **acquisition of knowledge**, but also on the **attainment of various generic skills**, including communication, teamwork and leadership skills.
- Apart from the 'common' learning and assessment methods like lectures and examinations, a **group project** on literature review, which includes a verbal presentation and a written report, is used to create a favourable learning environment for students to develop the expected generic skills (i.e. ILOs 2, 3 & 4). The group project is also used to assess the students' achievements of the three ILOs as well.
- **Peer assessment** is used to maximize learning opportunities by increasing student involvement in the assessment process; it also aims to motivate the less active students to give greater contribution to the group project.

Quick Information on OBE – What is Constructive Alignment?

- It is an outcome-based model (developed by Prof John Biggs) that is widely adopted in higher education
- The term 'Constructive' refers to what the learner does to construct meaning through relevant learning activities
- The term 'Alignment' refers to the teachers' job to use appropriate teaching and learning methods and assessment tasks that support the achievement of the ILOs
- Such an alignment helps to maximize the likelihood of having the ILOs achieved by students

Adopted from: Guide for Busy Academics, Constructive Alignment
http://www.hull.ac.uk/foundationaward/documents/constructivealignment.doc

Course Outline – BISC314 Tumor Biology

BISC314 **TUMOR BIOLOGY** **Room 2464**
Spring 2009 **Wednesdays & Fridays 3:00-4:20 PM**

Intended Learning Outcomes (ILO):
On successful completion of this course, students will be able to:
1. Understand and explain basic concepts in cancer biology
2. Acquire and evaluate information from biomedical literature
3. Organize biomedical information and communicate it with an audience and readership
4. Collaborate and lead in teamwork

Learning Activities:
1. Attention and active participation in lectures on basic concepts in carcinogenesis, cancer epidemiology, etiology, detection and treatment (for attaining ILO 1)
2. Literature review, group presentations and discussions on special cancer-related topics (for attaining ILO 2, 3 and 4)

Assessment:
1. Examinations (75%, for assessing ILO 1):
   Midterm Examination (25%)
   Final Examination (50%)
2. Literature review in groups (25%, for assessing ILO 2, 3, and 4)
   Verbal & visual presentation (17.5%, peer-assessed)
   Written report (7.5%)

Reference:
Principles of Cancer Biology, LJ Kleinsmith, Pearson Benjamin Cummings, 2006

Entry Level:
Prerequisites include BIOL104 and BIOL211.

Schedule:

Week	Date	Activity	Chapter
1	4/2, 6/2	Lectures: Cancer and Its Importance	1,2
2	11/2, 13/2	Lectures: Biological Features of Cancer	2,3
3	18/2, 20/2	Lectures: Identifying Causes of Cancer	4
4	25/2,27/2	Lectures: Chemicals, Radiation, and Cancer	5,6
5	4/3, 6/3	Review/Midterm Exam	
6	11/3, 13/3	Lectures: Oncogenes	9
7	18/3, 20/3	Lectures: Tumor Suppressor Genes	10
8	25/3, 27/3	Lectures: Infectious Agents and Cancer	7
9	1/4,/3/4	Lectures: Heredity and Cancer	8
10	8/4, 17/4	Lectures: Cancer Detection & Treatment,	11
11	22/4,24/4	Group Presentations & Discussions 1 & 2	
12	29/4	Group Presentation & Discussion 3	
13	6/5,8/5	Group Presentations & Discussions 4 & 5	
14	13/5, 15/5	Group Presentation & Discussions 6/Review	

Instructor: Dr. Eugene S. C. Hung x7303, Room 5452, bohsc@ust.hk