

PHYS S7Z04: Physics Through PBL 2

Module Details	
Module Code:	PHYS S7Z04
Full Title:	Physics Through PBL 2 APPROVED
Valid From::	Semester 1 - 2019/20 (June 2019)
Language of Instruction:	
Duration:	1 Semester
Credits::	5
Module Owner::	Tony Lennon
Departments:	Unknown
Module Description:	<ul style="list-style-type: none">• Knowledge of physics is fundamental to the understanding of all scientific concepts and principles. It is therefore a necessary part of any scientific program that aims to inculcate the basic principle underlining scientific observation and measurement. The physics taught here (heat,gas laws, light and sound) is the foundation upon which other concepts later in the programme are built.• Equally as important as the physics taught is the method of teaching which is Problem Based Learning. PBL encourages deep learning and the development of professional skills such as self motivation, group learning, team working, leadership skills, presentation skills, self esteem, and self confidence.

Module Learning Outcome	
On successful completion of this module the learner will be able to:	
#	Module Learning Outcome Description
MLO1	Contribute to problem solving and presentations as a member of a group (Process Skill).
MLO2	Evaluate the advantages of the group learning process and Peer assess the learning process (Process Skill).
MLO3	Expand on the electrical principles in Semester 1 and explain how the principles of heat can be used to perform calculations relating to heat (Product Content).
MLO4	Explain how the principles of optics and sound can be used to perform calculations relating to optics (Product Content).
MLO5	Perform experiments to make measurements in relation to heat and light and to write scientific reports (Product Content).
Pre-requisite learning	
Module Recommendations <i>This is prior learning (or a practical skill) that is strongly recommended before enrolment in this module. You may enrol in this module if you have not acquired the recommended learning but you will have considerable difficulty in passing (i.e. achieving the learning outcomes of) the module. While the prior learning is expressed as named DkIT module(s) it also allows for learning (in another module or modules) which is equivalent to the learning specified in the named module(s).</i>	
No recommendations listed	

Module Indicative Content	
Heat Heat and temperature; expansion; calorimetry; phase changes; heat transfer; equilibrium temperature; thermostats; temperature and the Gas Laws	
Light Geometric optics; Wave properties of Light and the EM spectrum.	
Sound Sound as a wave and sound as a sensor.	
Group Marking: Phase 1: Product mark: • Each member of the group receives the same mark prorated by attendance. • No process mark is allocated.	
Group Marking:Phase 2: Product and process mark. • Each member of the group receives the same Product mark prorated by attendance. • Individual process marks are awarded by the lecturer and agreed with each student.	
Group Marking:Phase 3: Peer assessment: • The total mark for the group is determined and prorated by attendance. The students then allocate these marks between the group members. This division is done either, preferably by discussion within the group, or by voting.	
Group Marking and Semesters • Semester 1 usually uses Phase 1 & 2 marking. •Semester 2 usually uses Phase 3 marking.	
Problem and Tutorial Weighting • In addition to the PBL problems each student normally submits 2 tutorial sheets for assessment each semester. • Each PBL problem and each tutorial sheet has the same weighting.	
Student Group Allocation The students are allocated into groups and the groups are changed after each member has been chair of the group. The balance of the groups and hence the group dynamic are controlled by the lecturers.	
Learning and Teaching Methods There will be 2 two-hour Problem-based Learning (PBL) sessions per week. The students are divided into groups of about 5, and each group works co-operatively and in a structured way to solve each of a series of about 15 problems. (Each problem will take usually 1 or 2 sessions to solve). Each group then presents a report or audiovisual presentation, which forms the basis for continuous assessment. The problems are designed so that practical work is an integral part where appropriate. Occasional tutorials will be used to reinforce the Curriculum Objectives covered in problems. Technology enhanced supports have been added through the generation of twelve screen-casts . These videos have been recorded for each tutorial and one for the spectrometer set up. They are available on Moodle with 24/7 access. These videos will facilitate our international students and will be a good resource for revision for all our students.	
Module Assessment	
Assessment Breakdown	%
Course Work	50.00%
Final Examination	50.00%
Module Special Regulation	

Assessments

Full Time On Campus			
Course Work			
Assessment Type	Other	% of Total Mark	50
Marks Out Of	0	Pass Mark	0
Timing	Every Week	Learning Outcome	1,2,3,4,5
Duration in minutes	0		
Assessment Description 1/Continuous Assessment will be based on the problem reports/presentation – the mark for each student being derived from a combination of tutor, peer and self assessment. There are approximately 13 PBL problems 2/A proportion of the continuous assessment mark will be based on usually 2 Course Work Exercises. 3/ All elements carry equal marks.			
No Project			
No Practical			
Final Examination			
Assessment Type	Formal Exam	% of Total Mark	50
Marks Out Of	0	Pass Mark	0
Timing	End-of-Semester	Learning Outcome	3,4,5
Duration in minutes	0		
Assessment Description End-of-Semester Final Examination			
Reassessment Requirement			
A repeat examination <i>Reassessment of this module will consist of a repeat examination. It is possible that there will also be a requirement to be reassessed in a coursework element.</i>			

Module Workload

Workload: Full Time On Campus					
Workload Type	Contact Type	Workload Description	Frequency	Average Weekly Learner Workload	Hours
Practical	Contact	PBL Problem Session	Every Week	4.00	4
Independent Study	Non Contact	Directed reading and group work outside lab.	Every Week	5.00	5
				Total Weekly Learner Workload	9.00
				Total Weekly Contact Hours	4.00
This module has no Part Time On Campus workload.					

Module Resources

Supplementary Book Resources

Duncan, Tom. (2005), Physics for Today and Tomorrow Second Ed., John Murray, London.
Duncan, Tom. (2000), Advanced Physics, Fifth Ed., Hodder, London.
Duncan, T. and Kennett, H.. (2001), GCSE Physics, Hodder, London.
Breithaupt, Jim. (2010), Physics, Third Ed., Palgrave Macmillan, London.
Nuffield Advanced Science. (2004), Book of Data, Longman, UK.
Casserty, B. and Horgan, B. (2000), Physics Now, Gill & Macmillan, Dublin.
O'Regan, Dan. (2000), Real World Physics, Folens, Dublin.
Oman, D and Oman, R. (1998), Physics for the Utterly Confused, McGraw Hill, New York.
Johnson, Keith. (2006), Physics for you, Hutchinson Education, England.
Nelkon, M.. (2005), Principles of Physics, Eighth Ed., Longman, England.
Gov. Pub.. Mathematical Tables, Dublin.
Grant, I. S. and Phillips, W. R.. (2001), The Elements of Physics, Oxford University Press, Oxford.
Henly, Randal. (2000), Physics Today, C J Fallon, Dublin.
Knight, Randal. (2008), Physics for Scientists and Engineers, International ed., Pearson, San Francisco.
Bloomfield, Louis. (2009), How Things Work, 4 Ed., Wiley, New York.
Ball, Moore, and Turner. (2008), Essential Physics for Radiographers, Fourth Ed., Blackwell, UK.
Geller, E. et al.. (2004), Dictionary of Physics, Third Ed., McGraw-Hill, NY.
Kenny, Andrew. (2010), Investigating Physics, Gill & Macmillan, Dublin, [ISBN: 9780717145881].
Giancoli, D. (2015), Physics: Principles with Applications, Global Ed., 7th. Pearson Ed.
Halliday, Resnick, Walker. (2014), Principles of Physics, 10th. Wiley.

This module does not have any article/paper resources

Other Resources

Website, Fear of Physics website,
<http://www.fearofphysics.com>
Website, Physics Link website,
<http://www.physicslink.com>
Website, Exploratorium educational website,
<http://www.exploratorium.edu>
Website, Physics Irish website,
<http://www.physics.slss.ie>
Website, Cern Website,
<http://www.public.web.cern.ch/public>
Website, Walter Fendt website,
<http://www.walter-fendt.de/ph14e>
Website, Teaching physics - Inst of Physics website,
<http://www.teachingphysics.iop.org>
Website, Physics website,
<http://www.physics.org>
Website, ESB website,
<http://www.esb.ie>
Video, Tony Lennon. (2017), Video 0 - Report Writing, DkIT, Tony Lennon.
Video, Tony Lennon. (2017), Videos 5 - 10 for Tutorials 5 - 10, DkIT, Tony Lennon.
Video, Tony Lennon. (2017), Video 11 - Spectrometer Set Up, DkIT, Tony Lennon.