THE HONG KONG UNIVERSITY OF SCIENCE AND TECHNOLOGY | HKUST Summer School

PHYS 1115 – Laboratory for General Physics II

School:	**School of Science**
Subject Area:	**Physics**
Course Credit:	**1**
Instructor:	**PANT Nidhi**
Pre-requisite/co-requisite:	**Details Here**

Notes:

- The syllabi provided here is for reference only and may be subject to changes and adjustments as determined by the course instructors.

The Hong Kong University of Science and Technology
PHYS1115 syllabus

Course Title: **Laboratory for General Physics II**
Course Code: PHYS1115
Credit Points: 1

Instructor (s)

Name: PANT, Nidhi
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Email: pantnidhi@ust.hk

Pre-requisite: NIL

Co-requisite: PHYS 1114 or PHYS 1314
Exclusion: NIL

Course Description

Brief Information/Synopsis: A laboratory course to accompany PHYS 1114/1314. Experiments in static and current electricity and magnetism, and optics are chosen to illustrate the experimental foundations of physics presented in the lecture courses.

Experiments:

EM1 Coulomb's Law
EM2 Capacitance and Electrostatic Energy
EM3 Coulomb Constant
EM4 DC Circuits
EM5 Magnetic Field Generated by a Coil
EM6* The Current Balance
EM7 Introduction to the Oscilloscope
EM8 Faraday's Law of Induction
EM9 AC Circuits
O1* Single-slit Diffraction and Double-slit Interference

* Report Summary required

Intended Learning Outcomes

Upon successful completion of this course, students should be able to

No.	*ILOs*
1	Conduct experimental investigations of fundamental electric, magnetic, and optical

	phenomena, as outlined in the laboratory manual
2	Carry out accurate measurements systematically, employing appropriate laboratory techniques and safety guidelines
3	Practice precise record-keeping, including organized data tables and effective graphical data representation
4	Analyze experimental data using elementary statistical methods and critically compare experimental outcomes with theoretical predictions
5	Write clear laboratory reports summarizing experimental methodology, theoretical background, data analysis, results, and conclusions
6	Develop and practice teamwork skills by collaboratively designing, performing, and completing laboratory experiments in groups
7	Explain underlying physical principles and concepts relevant to experiments, using proper scientific terminology
8	Discuss how laboratory experiments illustrate fundamental physics concepts and their connections to technology and everyday life

*Assessment marks for individual assessed tasks will be released within one week of the due date.

Assessment, grading and mapping the course ILOs to assessment tasks:

Percentage of coursework, examination, *etc*.:

Assessment	Assessing Course ILOs	**Explanation**
30% by lab performance	1-4	These tasks assess student's performance in the laboratory
60% by lab reports	4-6	These include pre-lab questions, result and data analysis and post lab questions. These tasks assess student's ability to make careful observations and clear presentation and inference from data
5% by report summaries	4-6	This task assess student's ability to summarize experimental findings with clear, logical presentation and writing skills.

5% by IPRS	4-5	These tasks assess student's understanding of the concepts taught in the tutorial

Grading Rubrics

Problems in the assessment tasks are graded based on correctness of the answers.

Final Grade Descriptors:

Grades	Short Description	Elaboration on subject grading description
A	Excellent Performance	Demonstrates a thorough understanding of the experimental objectives and procedures. Presents data in a clear, organized manner, effectively highlighting key trends and relationships with effective use of tables, graphs, or other visualizations. Exhibits a high level of self-reliance in troubleshooting and solving any experimental problems that arise. Utilizes equipment correctly and follows instructions with precision, completing all assigned tasks. Fully participates in the experiment, actively collaborating with lab partner and contributing ideas. Demonstrates an exceptional commitment to lab safety protocols and leaving the workspace clean. *[Typical overall course grade: ≥ 90 points out of 100 points]
B	Good Performance	Exhibits good grasp of the experimental objectives and procedures. Presents data in a clear and organized fashion, with effective use of tables, graphs, or other visualizations. Shows initiative in solving minor experimental problems, with minimal assistance. Correctly uses equipment and follows instructions, completing all assigned tasks. Actively participates in the experiment, cooperating well with lab partner.

		Adheres to lab safety guidelines and ensures the workspace is clean at the end of the session. *[Typical overall course grade: ≥ 70 points and < 90 points out of 100 points]
C	Satisfactory Performance	Demonstrates a general understanding of the experimental objectives and procedures. Makes relevant observations, but some details may be missing or not fully explained. Presents data in an organized manner, with adequate use of appropriate visualization tools. Requires occasional guidance in troubleshooting experimental issues. Correctly uses equipment and follows instructions, completing most assigned tasks. Participates in the experiment, contributing to the overall work with lab partner. Follows lab safety protocols and helps maintain the cleanliness of the workspace. *[Typical overall course grade: ≥ 50 points and < 70 points out of 100 points]
D	Marginal Pass	Shows a basic grasp of the experimental concepts, but with some gaps in understanding. Observations are limited or lack important details. Data presentation is functional but lacks clarity or organization. Requires frequent assistance in solving experimental problems. Occasionally struggles with using equipment correctly or following instructions but completes most assigned tasks. Participates in the experiment, but contribution to the work with lab partner is minimal. Generally, follows lab safety guidelines but may need reminders. *[Typical overall course grade: ≥ 40 points and < 50 points out of 100 points]
F	Fail	Demonstrates inadequate understanding of the experimental objectives and procedures. Observations are incomplete or inaccurate, with significant details missing.

		Data presentation is unclear or absent, making it difficult to interpret the results. Relies heavily on instructor guidance and is unable to solve experimental problems independently. Struggles to use equipment correctly or follow instructions, leaving assigned tasks incomplete. Participates minimally in the experiment and does not contribute effectively to the work with lab partner. Disregards lab safety protocols and fails to maintain the cleanliness of the workspace. * You will FAIL this course if you have completed only $\leq$ 7 experiments. *[Typical overall course grade: $<$ 40 points out of 100 points]

*The final grade will be assessed using criterion-referencing. The final grade reflects the criteria that students achieved in the course.

Course AI Policy

The use of generative artificial intelligence (AI) to obtain pre-lab and post-lab answers to questions in lab reports, and to write up summaries is NOT allowed in this course.

Communication and Feedback

Assessment marks for individual assessed tasks will be communicated via Canvas within one weeks of submission. Students who have further questions about the feedback including marks should consult the instructor within five working days after the feedback is received.

Resubmission Policy

Late submission (for Lab Reports and Summaries): 40% of the full marks (of the lab report or summary) of the concerned experiment will be deducted for late submission within 3 days after the due date. Late submission beyond 3 days after the due date will not be accepted.

Required Texts and Materials

A. Tutorial notes, supplementary materials, a booklet of lab manuals, and a booklet of lab reports are provided by the teaching lab
B. Course canvas homepage

Academic Integrity

Students are expected to adhere to the university's academic integrity policy. Students are expected to uphold HKUST's Academic Honor Code and to maintain the highest standards of academic integrity. The University

has zero tolerance of academic misconduct. Please refer to Academic Integrity | HKUST – Academic Registry for the University's definition of plagiarism and ways to avoid cheating and plagiarism.