# DESCRIPTION OF COURSEWORK

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| Course Code | PHY207 |
| Course Name | Physics Laboratory IV |
| Lecturer | Chung Fei Fang/ Siti Khatijah Binti Md Saad |
| Academic Session | 2022/04 |
| Assessment Title | Continuous assessment |

## A. Introduction/ Situation/ Background Information

Physics Laboratory IV is a practical course. The purpose of this course is to train students to work as a team to solve scientific problems. Students will be divided into a few groups. Each of the groups needs to design an experiment about mechanics or thermodynamics, incorporating Arduino as the main measurement tool. Each group will be allocated a maximum RM 300 budget to buy the equipment they need. There is no examination for this course. 100% of the course mark is from the continuous assessments. The continuous assessments include weekly discussions, a progress report, and presentations.

## B. Course Learning Outcomes (CLO) covered

At the end of this assessment, students are able to:

1. Adapt an experimental setup to investigate physical problems or scenarios.(P5, PLO3)
2. Work together in pairs or a group to plan, set up, and implement the experimental investigation.(A3, PLO4)
3. Qualify the methodology and veracity of experimental findings via written reports and viva voce.(A5, PLO5)
4. Construct charts and graphs using graphical software for the analysis of experimental findings.(P4, PLO6)
5. Organize a functional team with diverse roles to tackle different aspects of the experimental investigation.(A4, PLO8)

## C. University Policy on Academic Misconduct

1. Academic misconduct is a serious offense in Xiamen University Malaysia. It can be defined as any of the following:

i. **Plagiarism** is submitting or presenting someone else's work, words, ideas, data or information as your own intentionally or unintentionally. This includes incorporating published and unpublished material, whether in manuscript, printed or electronic form into your work without acknowledging the source (the person and the work).
ii. **Collusion** is two or more people collaborating on a piece of work (in part or whole) which is intended to be wholly individual and passed it off as own individual work.
iii. **Cheating** is an act of dishonesty or fraud in order to gain an unfair advantage in an assessment. This includes using or attempting to use, or assisting another to use materials that are prohibited or inappropriate, commissioning work from a third party, falsifying data, or breaching any examination rules.

2. All the assessments submitted must be the outcome of the student. Any form of academic misconduct is a serious offense that will be penalized by being given a zero mark for the entire assessment in question or part of the assessment in question. If there is more than one guilty party as in the case of collusion, both you and your collusion partner(s) will be subjected to the same penalty.

**D. Instruction to Students**

**Instructor's observation(40%)**

For students back to campus, they need to attend the class in the physics laboratory. For students who cannot back to campus, they need to attend the online meeting every week according to the official timetable. Each group must have at least 5 official meetings through Microsoft teams. The meeting needs to be recorded and conducted in English for at least 30 minutes. The recorded meeting will be evaluated based on the rubric of observation.

**Midterm presentation(15%)**

Each group needs to present their work with preliminary results in Week 8. The content and the skill of the presentation will be evaluated according to the rubric of viva voce.

**Midterm proposal report(15%)**

After the presentation, students need to submit a proposal report. The report will be evaluated according to the rubric of the lab report.

**Final presentation(15%)**

Each group needs to present their work with conclusive results in Week 15. The content and the skill of the presentation will be evaluated according to the rubric of viva voce.

**Final report(15%)**

After the presentation, students need to submit a final report to conclude their work this semester. The report will be evaluated according to the rubric of the lab report.

## E. Evaluation Breakdown

| No. | Component Title | Percentage (%) |
|---|---|---|
| 1. | Instructor's observation | 40% |
| 2. | Midterm proposal report | 15% |
| 3. | Midterm presentation(Viva voce) | 15% |
| 4. | Final Report | 15% |
| 5. | Final presentation(Viva voce) | 15% |
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| | **TOTAL** | **100 %** |

**APPENDIX 1**

## MARKING RUBRICS

## RUBRIC 1.0: INSTRUCTOR'S OBSERVATION

| Criteria | Description | Marks |
|---|---|---|
| 1 | i- Abide by the safety protocols in the lab | **3** |
| | ii- Follow reasonable instructions given by the facilitators | **4** |
| | iii- Take good care of the equipment used. | **3** |
| | i- Perform the experimental procedures with dexterity, accuracy and precision | **5** |
| | ii- Able to adapt and modify the default experimental setup for deeper investigation of physical laws. | **5** |
| | **Total CLO1** | **20** |

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| 2 | i- Coordinate well with your pairing or group members during the experiment | **5** |
| | ii- Work with team synergy | **5** |
| | **Total CLO2** | **10** |

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| 3 | i- Perfom the project and completing the fair share of the project. | **5** |
| | ii- Assist and support each other during the experimental planning, setup and investigation | **5** |
| | **Total CLO5** | **10** |

**RUBRIC 2.0: LAB REPORT**

| Criteria | Description | Marks |
|---|---|---|
| 1 | ~~i-Title and abstract of project~~ | **2** |
| | ii-Introduction, background and ~~reference of project~~ | **2** |
| | iii-Project objective and aim | **2** |
| | iv-Hypothesis and variables | **2** |
| | v-Methods and experimental setup | **2** |
| 2 | i-Table for objective 1 - Variables, Units, Significant Figures | **2** |
| | ii-Graphs for objective 1 - Axis, Labels, Units, Trendline, Error bars | **3** |
| | iii-Table for objective 2 - Variables, Units, Significant Figures | **2** |
| | iv-Graphs for objective 2 - Axis, Labels, Units, Trendline, Error bars | **3** |
| **Total CLO3** | | **20** |
| | | |
| 3 | i-Objective and hypothesis 1 - Response, Analysis of physical quantities from graphs | **3** |
| | ii-Objective and hypothesis 2 - Response, Analysis of physical quantities from graphs | **3** |
| | iii-Discussion of overall results and improvements to experiments | **4** |
| **Total CLO4** | | **10** |

**RUBRIC 3.0: VIVA VOCE**

| Criteria | Description | Marks |
|---|---|---|
| 1 | Explain properly the motivation of using the experimental setup(s) to investigate | **10** |
| 2 | Explain the validity of your experimental findings, reasons of whether they conform/deviate from theory | **10** |
| 3 | Respond to a variety of questions posed by the facilitators that is related to the experimental topic. | **10** |
| **Total CLO3** | | **30** |