WESTERN SYDNEY
UNIVERSITY

The College

# FOUNDATION PHYSICS 2

# 900080

**2021**

# UNIT OUTLINE

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|---|---|
| Last amended: | January 2021 |



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## Disclaimer

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| **Unit name** | Foundation Physics 2 |
| **Unit number** | 900080 |
| **Coordinator** | Ben Kelley |
| **Session** | 2021.1 |
| **Handbook summary** | This unit provides students with the background knowledge and skills in physics needed for Engineering courses. Students will cover more advanced content in mechanics, electricity, magnetism and waves. |
| **Credit point value** | 10 |
| **Prerequisite/s** | 900079 Foundation Physics 1 (if in Extended course) |
| **Corequisite/s** | N/A |
| **Unit incompatible with and not to be counted for credit with** | 700026/900068 Physics |
| **Assumed knowledge** | Year 10 Mathematics and Science or equivalent |
| **Unit level** | Level Z — Non-award preparatory unit |
| **Attendance requirements** | Students are expected to attend at least 80% of classes. Educational research consistently demonstrates that this attendance level is associated with a high likelihood of achieving a passing grade. |
| **Enrolment restrictions** | Students must be enrolled at The College |
| **Learning outcomes** | On successful completion of this unit, students should be able to:<br>1. use graphical and computer methods to analyse data and draw conclusions<br>2. identify and calculate the characteristics of uniformly accelerated motion and predict variables of motion based on past or current conditions including projectile motion<br>3. use Newtonian dynamics to quantitatively analyse objects in equilibrium in two dimensions<br>4. use the concepts of work and conservation of energy to quantitatively solve complex problems<br>5. use Newtonian dynamics to quantitatively analyse objects experiencing circular motion<br>6. demonstrate an ability to describe and apply quantitative relationship between charge, current, resistance, voltage and electrical power in the complex combined circuits<br>7. analyse quantitatively the properties of waves, and<br>8. perform experiments to demonstrate and measure physics principles and concepts. |

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| **Unit content** | In this unit students will learn about:<br>• Mechanics — Dynamics and Statics — Vectors in 2D and higher, motion in 2D, projectile motion<br>• Mechanics — Circular motion, momentum and impulse, work, energy, power and efficiency<br>• Electricity — Ohm's Law, electric current and circuits, circuits, electrical power, advanced circuit components<br>• Magnetism — Electric charge, Magnetic forces, electricity and magnetism, solenoids and electromagnets, the motor effect, electromagnetic induction, transformers<br>• Waves — Properties and behaviour, the wave equation, superposition, electromagnetic spectrum, properties of light. |
| **Mode of delivery** | This unit consists of four hours of tutorials each week and five two-hour practicals in total per term alternating with seven two-hour tutorials per term, as well as online activities via vUWS. |
| **Online learning requirements** | |
| **Essential requirements** | **Essential texts**<br>• The College, *Foundation Physics 2 practical workbook*, Western Sydney University The College, Sydney.<br>**Further resources**<br>• Butler, M 2003, *Preliminary physics*, Macquarie Revision Guides, Macmillan Education Australia, South Yarra.<br>• Butler, M 2003, *HSC physics*, Macquarie Revision Guides, Macmillan Education Australia, South Yarra.<br>• Mazur, E 2015, *Principles and practice of physics*, Pearson, Boston.<br>**Essential equipment**<br>• Non-programmable scientific calculator<br>• Notebook<br>• Protractor and ruler<br>• Pens and pencils |

## ASSESSMENT ITEMS AND WEIGHTING

Assessment for this unit will be based on the following components:

| Task | Weighting | Learning outcomes assessed | Mandatory task |
|---|---|---|---|
| 1. Intra-session exam 1 (1 hour) | 20% | 1–3 | Yes |
| 2. Intra-session exam 2 (1 hour) | 20% | 4–6 | Yes |
| 3. Quizzes ×5 (20 mins each) | 5% (1% for each quiz) | 1–4, 6, 8 | Yes |
| 4. 5 practicals | 15% (3% each) | 1–4, 6, 8 | Yes |
| 5. End of Session exam (2 hours) | 40% | 1–7 | Yes |
| Total | 100% | | |

For details of assessment due dates, please refer to the learning guide for this unit.

All marks will be determined in accordance with The College Assessment Policy.

All assessment tasks are mandatory unless otherwise specified. Should a student fail to attempt/submit the first formal assessment task in a unit, they will be deemed to be at risk and will need to follow an intervention plan in order not to receive a Fail Non-Submission (FNS) grade. However, failure to attempt/submit all other mandatory assessment tasks will result in an immediate FNS grade for the unit.

In order to pass this unit, students must:

- attempt/submit all mandatory assessment tasks, and
- achieve an overall mark of at least 50%.

***Note:*** *Due to the evolving COVID-19 pandemic, there may be changes to the delivery details. Students are advised to check the announcements on the unit vUWS site and communication from their teachers throughout the teaching session to ensure that they keep up to date with changing information.*