FOUNDATION PHYSICS 2
900080
2018

UNIT OUTLINE
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:

1. use graphical and computer methods to analyse data and draw conclusions
2. identify and calculate the characteristics of uniformly accelerated motion and predict variables of motion based on past or current conditions including projectile motion
3. use Newtonian dynamics to quantitatively analyse objects in equilibrium in two dimensions
4. use the concepts of work and conservation of energy to quantitatively solve complex problems
5. use Newtonian dynamics to quantitatively analyse objects experiencing circular motion
6. demonstrate an ability to describe and apply quantitative relationship between charge, current, resistance, voltage and electrical power in the complex combined circuits
7. analyse quantitatively the properties of waves, and
8. perform experiments to demonstrate and measure physics principles and concepts.
In this unit students will learn about:

- Mechanics — Dynamics and Statics — Vectors in 2D and higher, motion in 2D, projectile motion
- Mechanics — Circular motion, momentum and impulse, work, energy, power and efficiency
- Electricity — Ohm’s Law, electric current and circuits, circuits, electrical power, advanced circuit components
- Magnetism — Electric charge, Magnetic forces, electricity and magnetism, solenoids and electromagnets, the motor effect, electromagnetic induction, transformers
- Waves — Properties and behaviour, the wave equation, superposition, electromagnetic spectrum, properties of light.

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.

Essential requirements:

- The College, Foundation Physics 2 student workbook, Western Sydney University The College, Sydney.
- The College, Foundation Physics 2 laboratory workbook, Western Sydney University The College, Sydney.

Further resources:

- Butler, M 2003, Preliminary physics, Macquarie Revision Guides, Macmillan Education Australia, South Yarra.
- Butler, M 2003, HSC physics, Macquarie Revision Guides, Macmillan Education Australia, South Yarra.

Essential equipment:

- Non-programmable scientific calculator
- Notebook
- Protractor and ruler
- Pens and pencils
ASSESSMENT ITEMS AND WEIGHTING

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

<table>
<thead>
<tr>
<th>Task</th>
<th>Weighting</th>
<th>Learning outcomes assessed</th>
<th>Mandatory task</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Intra-session exam 1 (1 hour)</td>
<td>20%</td>
<td>1–3</td>
<td>Yes</td>
</tr>
<tr>
<td>2. Intra-session exam 2 (1 hour)</td>
<td>20%</td>
<td>4–6</td>
<td>Yes</td>
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<tr>
<td>3. Quizzes ×5 (20 mins each)</td>
<td>5% (1% for each quiz)</td>
<td>1–4, 6, 8</td>
<td>Yes</td>
</tr>
<tr>
<td>4. 5 practicals</td>
<td>15%</td>
<td>1–4, 6, 8</td>
<td>Yes</td>
</tr>
<tr>
<td>5. Final exam (2 hours)</td>
<td>40%</td>
<td>1–7</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>100%</td>
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</tbody>
</table>

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
- attain an overall mark of at least 50%.