FOUNDATION PHYSICS 1

900079

2018

UNIT OUTLINE
### Unit name
Foundation Physics 1

### Unit number
900079

### Coordinator
Ben Kelley

### Session
2018.3

#### Handbook summary
This unit provides a brief introduction to the essentials of physics. This unit is focused on the skills and knowledge that are needed by students from a variety of science, construction and engineering courses in their first year of study. The content covers introductory topics in mechanics, energy and power, electricity, and waves.

#### Credit point value
10

#### Prerequisite/s
N/A

#### Corequisite/s
N/A

#### Unit incompatible with and not to be counted for credit with
N/A

#### 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
2. identify the characteristics of uniform motion and calculate variables of motion in one dimension
3. identify the characteristics of uniformly accelerated motion and predict variables of motion based on past or current conditions in one dimension
4. use Newtonian dynamics to quantitatively analyse objects in equilibrium and acceleration
5. use the concepts of work and conservation of energy to explain the behaviour of different systems
6. demonstrate an ability to describe and apply quantitative relationship between charge, current, resistance and electrical power in the combined circuits
7. quantitatively analyse reflection and refraction of waves, and
8. perform experiments to demonstrate and measure physics principles and concepts.

Unit content
In this unit students will learn about:
1. Mechanics — Dynamics and Statics — SI units and their relationship, addition and subtraction of force vectors, motion in a straight line, graphing motion, Newton's Law of Motion, momentum and impulse, conservation of momentum
2. Mechanics — Energy and Power — Work and energy, conservation of energy, power and efficiency
3. Electricity — Ohm's law, electric current and circuits, electrical power, using electricity safety
4. Waves — Description of wave motion, mechanical waves, sound waves

Laboratory induction requirements
This unit will require you to complete practical activities and/or workshop activities in the laboratory throughout the term.

Before you can participate in the practical activities and/or workshop activities you must complete an online laboratory induction which can be accessed through the vUWS website.

It is the responsibility of the individual student to complete a laboratory induction before their first practical/workshop activity. Only students who complete their laboratory inductions may attend the practical and workshop activities. Any student who misses a practical or workshop activity will receive a mark of zero for the task missed.

Students are required to complete a laboratory induction at the beginning of each term.

Students must have correct footwear when using the laboratories or they will be refused entry.

Mode of delivery
This unit consists of four hours of tutorials each week and nine two-hour practicals in total per term, alternating with three two-hour tutorial sessions per term. There may be additional activities on the unit’s vUWS site.

Online learning requirements

Essential requirements

Essential texts
- The College, *Foundation Physics 1 student workbook*, Western Sydney University The College, Sydney.
- The College, *Foundation Physics 1 laboratory workbook*, Western Sydney University The College, Sydney.

Further resources
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</td>
<td>15%</td>
<td>1–3</td>
<td>Yes</td>
</tr>
<tr>
<td>2. Intra-session exam 2</td>
<td>20%</td>
<td>3–5</td>
<td>Yes</td>
</tr>
<tr>
<td>3. Quizzes ×5 (1% each)</td>
<td>5%</td>
<td>1, 2, 4–8</td>
<td>Yes</td>
</tr>
<tr>
<td>4. Report (Practicals ×5)</td>
<td>20%</td>
<td>1, 2, 4–8</td>
<td>Yes</td>
</tr>
<tr>
<td>5. Final exam</td>
<td>40%</td>
<td>1–7</td>
<td>Yes</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
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<td></td>
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</tbody>
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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%.