
CERTIFICATE IV IN ADULT TERTIARY PREPARATION (10397NAT)

FOUR WEEK INTENSIVE CLASSES - 19 NOVEMBER TO 14 DECEMBER

PHYSICS SPECIALISATION

The Physics Specialisation applies to those who require foundation Physics knowledge and skills for entrance to tertiary study in a relevant discipline or field.

There are three units of study within the Physics Specialisation.

In Unit 1: ATPPHY401A students will learn to apply theoretical concepts of Measurement, Wave Motion, Optics and Electricity theory to manipulate data and solve problems in Physics. Knowledge to be gained in this unit:

Physics measurement including: fundamental quantities, significant figures, scientific notation, order of magnitude, sine and cosine rules, vectors

Knowledge of Wave Motion, Optics including: the characteristics of waves; properties of plane mirrors.

Convex and concave mirrors and lenses; the laws of reflection and refraction e.g. Snell's Law

Knowledge of Electricity laws and principles including: the first law of electrostatics (i.e. like repels like, unlikes attract); conduction, induction, elementary charge; properties of electric fields and electric field strength; Coulomb's Law; Ohm's Law; current, voltage and resistance.

General physics knowledge including: scientific language conventions used in a Physics context (such as symbols, Terms and definitions); knowledge of hazards associated with the substances and equipment used in laboratory work and risk mitigation strategies; strategies to assess the reliability of data and to account for errors in data.

The Performance Criteria for ATPPHY401A describes the required performance needed to demonstrate achievement of the following elements:

<p>1. Develop solutions to problems in Physics</p>	<p>1.1 Identify and select the principles, laws and equations of Physics Measurements, Wave Motion, Optics and Electricity relevant to the physics problems.</p> <p>1.2 Develop a solution to Physics problems using a problem solving process, the appropriate formula and calculations.</p>
<p>2. Collect and use scientific data in a Physics context</p>	<p>2.1 Collect data from primary data sources or secondary data sources.</p> <p>2.2 Analyse and evaluate scientific data relating to Measurement, Wave Motion, Optics and Electricity Theory and draw conclusions.</p> <p>2.3 Manipulate data and perform calculations to explain observations and identify trends.</p>
<p>3. Communicate effectively in a Physics context</p>	<p>3.1 Convey Physics ideas and information in a genre/medium appropriate to audience and purpose using electronic communication according to the physics problem/task.</p> <p>3.2 Use the language conventions of Physics to communicate ideas and information relating to Measurement, Wave Motion, Optics and Electricity Theory.</p> <p>3.3 Sequence ideas and information logically.</p>
<p>4. Conduct laboratory operations and experiments</p>	<p>4.1 Select and use laboratory equipment appropriately to conduct laboratory procedures.</p> <p>4.2 Perform laboratory procedures in a manner that demonstrates an understanding of safe laboratory practices and minimises the risk to self and others.</p> <p>4.3 Follow verbal and written instructions to perform laboratory operations.</p>

In Unit 2: ATPPHY402A students will learn to apply the concepts of Kinematics, Dynamics and Gravitational Forces to manipulate data and solve problems in Physics. Knowledge to be gained in this unit:

Knowledge relating to Kinematics and Dynamics including: displacement, velocity and acceleration; equations of motion; projectile motion; circular motion; Newton's laws of motion; weight and friction; momentum and impulse; work and energy

Knowledge relating to Gravitational Forces including: kinetic, gravitational and elastic potential energy; Newton's law of Universal Gravitation

General physics knowledge including: scientific language conventions used in a Physics context (such as symbols, terms and definitions); knowledge of hazards associated with the substances and equipment used in laboratory work and risk mitigation strategies

Strategies to assess the reliability of data and to account for errors in data

The Performance Criteria for ATPPHY402A describes the required performance needed to demonstrate achievement of the following elements:

<p>1. Develop solutions to Physics problems</p>	<p>1.1 Identify and select the Principles, laws and equations of Kinematics, Dynamics and Gravitational Forces relevant to the physics problems.</p> <p>1.2 Develop a solution to Physics problems using a problem solving process, the appropriate formula and calculations.</p>
<p>2. Collect and use scientific data in a Physics context</p>	<p>2.1 Collect data on Kinematics, Dynamics and Gravitational Forces from primary data sources or secondary data sources.</p> <p>2.2 Analyse and evaluate scientific data relating to Kinematics, Dynamics and Gravitational Forces and draw conclusions.</p> <p>2.3 Manipulate data and perform calculations to explain observations and identify trends.</p>
<p>3. Communicate effectively in a Physics context</p>	<p>3.1 Convey Physics ideas and information in a genre/medium appropriate to audience and purpose using electronic communication according to the physics problem/task.</p> <p>3.2 Use the language conventions of Physics to communicate ideas and information relating to Kinematics, Dynamics and Gravitational Forces.</p> <p>3.3 Sequence ideas and information logically.</p>
<p>4. Conduct laboratory operations and experiments</p>	<p>4.1 Select and use laboratory equipment appropriately to conduct laboratory procedures.</p> <p>4.2 Perform laboratory procedures in a manner that demonstrates an understanding of safe laboratory practices and minimises the risk to self and others.</p> <p>4.3 Follow verbal and written instructions to perform laboratory operations.</p>

In Unit 3: ATPPHY403A students will learn to apply the concepts of Electronics, Magnetism and Nuclear Physics to manipulate data and solve problems in Physics. Knowledge to be gained in this unit:

Electricity – electronics: resistor colour codes, diodes, LED and transistors.

Magnetism: magnetic fields and magnetic field strength; the left and right hand rule; Faraday's and Lenz's Laws; how electric motors, generators and transformers work.

Atomic and Nuclear Physics: the photoelectric effect; the energy levels of the atom; threshold frequency; work function; stopping potential; properties of x-rays.

The Performance Criteria for ATPPHY403A describes the required performance needed to demonstrate achievement of the following elements:

<p>1. Develop solutions to Physics problems</p>	<p>1.1 Identify and select the Principles, laws and equations of Electronics, Magnetism and Nuclear Physics relevant to the physics problems.</p> <p>1.2 Develop a solution to Physics problems using a problem solving process, the appropriate formula and calculations.</p>
<p>2. Collect and use scientific data in a Physics context</p>	<p>2.1 Collect data from primary data sources or secondary data sources.</p> <p>2.2 Analyse and evaluate scientific data relating to Electronics, Magnetism and Nuclear Physics and draw conclusions.</p> <p>2.3 Manipulate data and perform calculations to explain observations and identify trends.</p>
<p>3. Communicate effectively in a Physics context</p>	<p>3.1 Convey Physics ideas and information in a genre/medium appropriate to audience and purpose using electronic communication according to the physics problem/task.</p> <p>3.2 Use the language conventions of Physics to communicate ideas and information relating to Electronics, Magnetism and Nuclear Physics.</p> <p>3.3 Sequence ideas and information logically.</p>
<p>4. Conduct laboratory operations and experiments</p>	<p>4.1 Select and use laboratory equipment appropriately to conduct laboratory procedures related to Electronics, Magnetism and Nuclear Physics.</p> <p>4.2 Perform laboratory procedures in a manner that demonstrates an understanding of safe laboratory practices and minimises the risk to self and others.</p> <p>4.3 Follow verbal and written instructions to perform laboratory operations.</p>

November Intensive Physics Timetable - 2018

Mon	Tue	Wed	Thu	Fri	Sat
19 Nov 2.00pm – 6.30pm	20 Nov 2.00pm – 6.30pm	21 Nov 2.00pm – 6.30pm	22 Nov 2.00pm – 6.30pm	23 Nov 2.00pm – 6.30pm	24 Nov
26 Nov 2.00pm – 6.30pm	27 Nov 2.00pm – 6.30pm	28 Nov 2.00pm – 6.30pm	29 Nov 2.00pm – 6.30pm	30 Nov 2.00pm – 6.30pm	1 Dec
3 Dec 2.00pm – 6.30pm	4 Dec 2.00pm – 6.30pm	5 Dec 2.00pm – 6.30pm	6 Dec 2.00pm – 6.30pm	7 Dec 2.00pm – 6.30pm	8 Dec
10 Dec 2.00pm – 6.30pm	11 Dec 2.00pm – 6.30pm	12 Dec 2.00pm – 6.30pm	13 Dec 2.00pm – 6.30pm	14 Dec 2.00pm – 6.30pm	