



VCE INDUCTION

Units 1 and 2

Physics



Welcome letter

Dear students,

Welcome to Physics Unit 1 and 2.

If you are well **organised, motivated, have a good work ethic and positive attitude**, you will have an enjoyable and successful year in Physics.

In order to get the most out of this course, there are a number of things that we strongly suggest that you do over the summer and continue throughout next year.

1. Obtain the necessary **exercise, practical and text books**.
2. Obtain/retain a good **scientific calculator**
3. Complete the holiday homework tasks before coming back to school.
4. Familiarise yourself with the course outline provided in this package.
5. Develop a good working relationship with your class teacher and maintain regular communication with them throughout the year.
6. Develop a study timetable that will assist you in meeting the work deadlines and to prepare for Tests and Examinations.
7. Ensure that you become familiar with the resources (prescribed textbook, websites, notes, other textbooks)
8. Work hard to complete all work by the due date.
9. Use the resources available on the Moodle website.
10. Ensure that you have a balanced life that consists of schoolwork, exercise, sport, leisure, rest and a healthy diet.

If you have any queries about the course, please contact us at school or by email.

Regards,

Mr Serpant and Mrs Wilson

Email addresses/Staffroom locations of Staff teaching subject

NAME OF TEACHER	EMAIL ADDRESS	LOCATION
Mr Serpant	SerpantJ@vermontsc.vic.edu.au	Maths Staffroom
Mrs Wilson	WilsonJ@vermontsc.vic.edu.au	Maths Staffroom

OUTLINE OF STUDY

Unit 1:

Outcome 1- Thermodynamics

On completion of this unit the student should be able to apply thermodynamic principles to analyse, interpret and explain changes in thermal energy in selected contexts, and describe the environmental impact of human activities with reference to thermal effects and climate science concepts.

Outcome 2- Electricity

On completion of this unit the student should be able to investigate and apply a basic DC circuit model to simple battery-operated devices and household electrical systems, apply mathematical models to analyse circuits, and describe the safe and effective use of electricity by individuals and the community.

Outcome 3- Matter

On completion of this unit the student should be able explain the origins of atoms, the nature of subatomic particles and how energy can be produced by atoms.

Unit 2:

Outcome 1- Movement

On completion of this unit the student should be able to investigate, analyse and mathematically model the motion of particles and bodies.

Outcome 2- Option

One option is to be selected by the student from the following:

- What are stars?
- Is there life beyond Earth's Solar System?
- How do forces act on the human body?
- How can AC electricity charge a DC device?
- How do heavy things fly?
- How do fusion and fission compare as viable nuclear energy power sources?
- How is radiation used to maintain human health?
- How do particle accelerators work?
- How can human vision be enhanced?
- How do instruments make music?
- How can performance in ball sports be improved?
- How does the human body use electricity?

Students to investigate an in–depth question, cover the key Physics Ideas and then present these findings to the class.

Outcome 3- Practical Investigation

On completion of this unit the student should be able to design and undertake an investigation (can be in a pair) of a physics question related to the scientific inquiry processes of data collection and analysis, and draw conclusions based on evidence from collected data.

Produce an individual Poster

TIMELINE UNIT 1 and 2

WEEK	AREA OF STUDY	CONTENT	OUTCOME
T	1	<ul style="list-style-type: none"> Intro, Heat/Temperature /Zeroth Law Maths skills 	
1	1	<ul style="list-style-type: none"> Heat Transfer First Law 	
2	1	<ul style="list-style-type: none"> Heat Capacities Latent Heat 	
3	1	<ul style="list-style-type: none"> Spectra, Stefan-B Equation Wien's Law 	
4	1	<ul style="list-style-type: none"> Greenhouse Effect Climate Change 	Project
5	1	<ul style="list-style-type: none"> Revision Test 	Topic Test, plus experiments, project
Electricity			
6	2	<ul style="list-style-type: none"> Charge, Current Voltage, Energy 	
7	2	<ul style="list-style-type: none"> Resistance- series and parallel IV Graphs 	
8	2	<ul style="list-style-type: none"> Power Voltage dividers 	
9	2	<ul style="list-style-type: none"> Transducers Non-Ohmic devices 	
10	2	<ul style="list-style-type: none"> Household electricity Safety 	

Term 1 holidays

Term 2

WEEK	AREA OF STUDY	CONTENT	OUTCOME
1	2	<ul style="list-style-type: none"> Electric shock Revision 	Topic Test, plus experiments, questions
Matter			
2	3	<ul style="list-style-type: none"> Nuclear Radiation Half Life 	
3	3	<ul style="list-style-type: none"> Nuclear Forces Fission and Fusion 	
4	3	<ul style="list-style-type: none"> Particles/Anti Particles The family of particles 	
5	3	<ul style="list-style-type: none"> Big Bang and Inflation Formation of Atoms/ Light from atoms 	
6	3	<ul style="list-style-type: none"> revision Topic Test Exam Revision 	Topic Test, a mind map?, experiments, questions
7		<ul style="list-style-type: none"> Unit 1 Exams 	Semester Exams
8		<ul style="list-style-type: none"> Unit 1 Exams 	Semester Exams
End of Unit 1			

Movement			
9	1	<ul style="list-style-type: none"> • Vectors and Scalars, velocity • Acceleration, Motion graphs 	

Term 2 holidays

Term 3

WEEK	AREA OF STUDY	CONTENT	OUTCOME
1	1	<ul style="list-style-type: none"> • Equations of Motion 	
2	1	<ul style="list-style-type: none"> • Forces 	
3	1	<ul style="list-style-type: none"> • Force problems • Gravity 	
4	1	<ul style="list-style-type: none"> • Equilibrium 	
5	1	<ul style="list-style-type: none"> • Torque , momentum • Impulse 	
6	1	<ul style="list-style-type: none"> • conservation of momentum 	
7	1	<ul style="list-style-type: none"> • Energy • conservation of energy 	Experiments and Questions due
8	1	<ul style="list-style-type: none"> • Revision • Test 	Motion test

Options

9	<ul style="list-style-type: none"> • Students form pairs and plans out their schedule for the next few weeks. • Confirm in-depth question • Clarify issues, Understand content, etc. 	
10	<ul style="list-style-type: none"> • Investigate option 	

Term 3 Holidays

- Explore ideas for practical investigation.
- Practice exam questions.

Term 4

1	<ul style="list-style-type: none"> • Students prepare their presentation to the rest of the class. Each pair can have a minimum 3 minutes to present, plus a Q and A. The rest of the class provides assessment input. 	Task Submissions and Presentation of in-depth question and summary of learning
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Practical Investigation

WEEK	AREA OF STUDY	CONTENT	OUTCOME
2	3	<ul style="list-style-type: none"> • Groups complete the booklet detailing their detailed plans. • Review assessed plan, • Set up equipment, • Ensure it works, seek help if needed, • Begin collecting and recording data, • Analyse data progressively looking for trends and anomalies, • Adapt method as needs arise, 	

3	3	<ul style="list-style-type: none"> • Document any difficulties, even minor ones, and how they were resolved, • Take photos of equipment layout for use in the A2 poster, • update description of the method, • finalise data analysis and graphs, 	
4	3	<ul style="list-style-type: none"> • write up a conclusion in the log book, • paste / copy text and graphs from log book into sections in an electronic poster template, • review poster to see if it is an effective summary of the investigation. 	
5		<ul style="list-style-type: none"> • Exam Revision 	
6		<ul style="list-style-type: none"> • Exam Revision 	
7		<ul style="list-style-type: none"> • Unit 2 Exams- longer Unit 1 and 2 Exam 	Unit 2 Exams
8		<ul style="list-style-type: none"> • Unit 2 Exams 	Unit 2 Exams

Coursework Requirements

For an outcome to be scored, complete the prescribed coursework questions **by** the final date of the outcome.

Satisfactory Requirements

To obtain an S for each unit students are to;

- Obtain at least 40 % on most assessment tasks
- Complete significant amount of the coursework
- Complete large majority of practical write ups by the due dates.
- **OR** If failed to meet one or more requirements you must complete relevant redemption work as directed by the teacher or student manager.

Sources of support for the Study

Links

VCAA Physics <http://www.vcaa.vic.edu.au/vce/studies/physics/physicsindex.html>

Jacaranda Textbook and Study On <https://www.jacplus.com.au/>

Australian Institute of Physics – Victorian Branch <http://www.vicphysics.org/>

Phet simulations- <https://phet.colorado.edu/>

Materials Required – Texts, Stationery, and other Resources

Required Materials to be brought to each class

- Writing materials
- Text: Jacaranda Physics 1 Textbook/ebook and Study On package (about \$95) (new edition for 2020)
- Scientific Calculator
- Note and Question Book
- Experiment Book (**Provided**)

All Transition and Holiday Tasks to be completed in preparation for the beginning of the school year