

STAV & AIP VCE Physics Teachers' Conference 2008

Friday 15 February 2008 @ Monash University, Wellington Road, Clayton

Each participant will receive a CD of Proceedings from the VCE Conferences Series 2008 as part of their registration.

The Program includes:

- Day and Evening sessions.
Participants can attend the day and/or evening sessions
- Opening address by Maria James, VCAA, on 'The Physics Study Design 2009 - 2012', repeated in the evening program.
- The Physics Oration by Prof Peter Johnston, RMIT, on 'The Physics underlying Nuclear Issues'.
- Report by Bruce Walsh, the Chief Assessor, on the June and November Exams, available twice during the day program and by video replay in the evening program.
- 65 workshops over six sessions with many repeated.

Conference Program

Day Program

8:00am	Registration opens (Foyer, South One LT, Bld 64)
8:50am	Conference Opening (South One LT, Bld 64)
9:00am	The Physics Study Design 2009-2012 Maria James, Science Manager, VCAA (South One LT, Bld 64)

10:15am Workshops - Session A

11:15am	Morning Tea/Displays (Campus Centre, Bld 10)
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12.00pm Workshops - Session B

1.00pm	Lunch/Displays (Campus Centre, Bld 10)
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1.50pm Workshops - Session C

2.55pm Workshops - Session D

4:00pm	Physics Oration (South One LT, Bld 64)
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5:00pm	Refreshments, Wine and Cheese
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Evening Program

6.00pm	Conference Dinner
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6.30pm	Evening registration
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7.00pm Workshops - Sessions E

8.00pm Workshops - Sessions F

9.00pm	Conference ends
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**Science Teachers' Association of Victoria
VCE Conference Series 2008**

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STAV & AIP VCE Physics Teachers' Conference 2008

Descriptions of Workshop Sessions

(Commercial: **C**, New Teachers: **N**,
Units 1 & 2: **1&2**, Units 3 & 4: **3&4**,
General: **G**)

Day Program

Session A - 10.15am

A1 Chief Assessor's Report on how students' performed on the Unit 3 & 4 Exams in 2007 (3&4) (REPEATED IN B1, VIDEO REPEAT IN F1)

Bruce Walsh, Xavier College

The purpose of this session is to assist teachers in preparing their students for the Unit 3 and Unit 4 Physics exams. The Chief Assessor will report on the performance of last year's Year 12 students. Comments on the quality of specific questions, positive or negative, should be directed to VCAA.

A2 Teaching the Synchrotron DS (3&4) (REPEATED IN B2 AND E2)

Helen Lye, ACER and Dan O'Keefe, AIP Education Committee

This session will be about the material prepared by the AIP Education Committee's DIIRD funded "Synchrotron Project". It includes teaching plans linking this Detailed Study to the core Areas of Study, simple practical activities as well as an experiment on Bragg diffraction with microwaves and demonstration of using Excel to generate diffraction graphs for student analysis. Much of the session will be devoted to hands-on activities.

Limit: 30

A3 Observing the Universe Modern Telescopes (1&2) Repeated in B3

Robert Hollow, ATNF

The power of modern telescopes and their instruments provides astronomers with a wealth of data across the electromagnetic spectrum. Specific examples of a range of telescopes are used to show how astronomers observe the Universe. Online and software simulations that allow students to use real data will be explored.

Limit: 30

A4 Teaching the Transistor (3&4) (REPEATED WITH A DIFFERENT PANEL IN B4)

A panel of three experienced teachers will talk about how they go about teaching the topic of the transistor.

Limit: 30

A5 The Physics of Model Rocketry (1&2) repeated in B5

Peter Razos, Trinity College

Energy conversion, forces, chemical reactions. Can you teach these topics with excitement and involvement of the entire class? You can do it through model rocketry. Participants will be encouraged to build and launch their own model rocket. We will also discuss strategies for the use of this resource in the science, chemistry and physics classrooms. You can visit the online resources prior to the conference on www.dynamicscience.com.au/tester enter as a guest and go to curriculum material (flight). All participants will come away with resources and strategies that can have immediate impact on their classroom teaching.

Limit: 30

A6 Renewable Energy and Ecologically Sustainable Design at Ecolinc (1&2) (REPEATED IN B6)

Suzanne Clark & Nicole Stanley, Ecolinc, Bacchus Marsh College

Ecolinc is a new DEECD Environmental Science Centre of Excellence (www.ecolinc.vic.edu.au) awarded the 2005 RAI National Sustainable Architecture prize. In this session, take a virtual tour of Ecolinc's sustainability trail, highlighting the award-winning ecologically sustainable design (ESD) features of the building. Explore current and past data available through the online Building Maintenance System (BMS) including electricity generation, energy, gas and water usage, and the CSIRO designed Weatherwall. For Unit 2 Physics AoS 3, use Ecolinc's award winning ESD design features, BMS data and energy source equipment to initiate or conclude an investigation into alternate energy.

Limit: 20

A7 Investigating the Characteristics of Photovoltaic Panels (1&2) (REPEATED IN D6)

Saverio Ciccone, Overnewton Anglican Community College

More schools will look to use or experiment with photovoltaic (solar) panels as the awareness of global warming and fossil fuel depletion grows in society. In this session the group will undertake a short hands-on practical activity to generate quantitative data from a photovoltaic panel and thus understand the practical and hardware requirements. The data will be analysed to understand the current-voltage characteristics of photovoltaic panels. Topic notes will be provided which incorporate the session's practical and working notes for the detailed study in Unit 2 – Investigations: Alternative Energy Sources.

Limit: 30

A8 Youtube Physics: Using online movie resources (G)

Christopher Jones, University High School

A large number of resources suitable for teaching VCE Physics are available on the Internet. This session is designed to help participants find Physics videos that are useful to supplement classroom teaching. In particular this session will focus on movies posted on YouTube and software tools available for downloading.

Limit: 20

A9 Making Sense of Relativity (3&4)

Ross Philips, PLC

This session will demonstrate some activities suitable for developing conceptual understanding of some of the concepts in the Detailed Study "Einstein's Relativity", including the postulates of relativity, time dilation, length contraction and the twins paradox.

Limit: 30

A10 How to organise a Physics Camp (1&2)

Paul Fielding & Richard Olsen, Billanook College, Carmel Fry & Paul FitzGerald, Ivanhoe Girls' Grammar School

Send your students up in a plane to let them feel "two G" and "zero G". Send them up in a glider to experience the dramatic effect of a thermal up draught. During this session we will show what we do on our week long Physics Camp. We will share how we organise our camp, now in its 17th year. Our students enjoy a week of practical activities and theory while learning about physics in an exciting context.

Limit: 30

A11 Saving Time, Improving Learning: Using Units 1 & 2 Detailed Studies as Context (1&2)

Neil Champion, Williamstown High School

Detailed studies can provide the context through which much of the common areas of study may be taught. Planning a course based on this principle enables teaching time to be saved and opens up opportunities for better learning. This approach will be demonstrated for Unit 1 and Unit 2. There will be opportunity to explore the underlying planning process.

Limit: 30

Morning Tea/Displays
11.15am

A12 Applying Physics to Patient Care (1&2)

Mr Chris Fox, Senior Medical Physicist,
Peter McCallum Cancer Centre

The session will briefly describe the physics aspects of the effects of radiation on the human body and of the medical technology at Peter Mac, how the technology is used in diagnosis and treatment, as well as information on the training and career paths associated with medical physics.

Limit: 30

A13 Materials & Structures (3&4)

Simon Matheson and Sean Elliott,
CSIROSEC

The activities in this workshop illustrate the central ideas of the Unit 3 Detailed Study 'Investigating Structures and Materials'. The equipment used offers participants a depth of analysis unavailable in most school labs. The specific activities include axial tested to obtain accurate load-extension data observing the elastic and plastic behaviour of difference materials, testing structures to identify and measure forces, and examining the effect of temperature on the toughness of materials. All equipment, including some data logging activities, is provided.

Limit: 30

A14 Physics with Vernier LabQuest: Physics across gr5-yr12 (C) (REPEATED IN E5)

Gary Bass, CP Software

The Inquiry Connection: Creating Thoughtful, Independent Students. Ultimately, we want students to engage in inquiry: to ask their own questions, design their own procedures, and basically be independent, sceptical, creative, hard-nosed experimentalists from the first day of class. We want to throw away the cookbook. Vernier Software and Technology supports the Vague Question approach (VELS essential question) At the beginning of study, students are posed an unanswerable question, 'that depends' on a number of variables. Their subsequent investigations identify and isolate the relationships and provide a complete understanding of the issues needed to answer the vague question. Hands-on session, macbook computers provided, LoggerPro and Fathom software will be used for data collection and modelling from Vernier LabQuest and sensor measurements. Notes for Luna Park will also be available, with CD of previous year's data.

Limit: 30

Session B - 12.00pm

B1 Chief Assessor's Report on how students' performed on the Unit 3 & 4 Exams in 2007 (3&4)

(REPEAT OF A1, VIDEO REPEAT IN F1)

Bruce Walsh, Xavier College

B2 Teaching the Synchrotron DS (3&4) (REPEAT OF A2)

Helen Lye, ACER and Dan O'Keeffe,
AIP Education Committee

Limit: 30

B3 Observing the Universe Modern Telescopes (1&2) (REPEAT OF A3)

Robert Hollow, ATNF

Limit: 30

B4 Teaching the Transistor (3&4) (REPEAT OF A4 WITH A DIFFERENT PANEL)

A panel of three experienced teachers will talk about how they go about teaching the topic of the transistor.

Limit: 30

B5 The Physics of Model Rocketry (1&2) (REPEAT OF A5)

Peter Razos, Trinity College

Limit: 30

B6 Renewable Energy and Ecologically Sustainable Design at Ecolinc (1&2) (REPEAT OF A6)

Suzanne Clark & Nicole Stanley, Ecolinc,
Bacchus Marsh College

Limit: 20

B7 Physics and Speech: Great things to do with Sound (3&4) (REPEATED IN D7)

Russell Downie, PLC

This is a repeat of the well attended session from 2007. Participants will leave with exciting real things that they can do with students in Sound in VCE or IB Physics and also sound in General Science. The session will focus on what our body does when we make sounds as well as other demonstrations.

Limit: 30

B8 Alternative Energy with Professor Gizmo: Tony and Carol Brimson (1&2) (REPEATED IN C8)

Bruce Schmidt DEECD Grampians Region,
Roy Rhoderick Ballarat High School,
Stephanie Davison University of Ballarat

This ASISTM project trialled in 10 secondary schools in the Grampians Region in partnership with the University of Ballarat, combines practical and theoretical challenges, innovative design, and construction tasks to engage students in teamwork, planning, problem solving and communication. The project involved building hand-powered Alternative Energy generators, ideal for investigations in Unit 2 Alternative Energy and Unit 4 Electric Power. Participants can experience the activities: robots, a bike-powered generator, a wind powered generator, and the hand-powered generators. The hand-powered generators became the power source for Electric Powered Vehicles which were raced to compare and evaluate the efficiency of the students' constructed generator.

Limit: 30

B9 Hands-on Photonics for VCE Physics (3&4)

Simon Matheson, CSIROSEC

CSIRO offer an exciting hands-on program examining the physics of this rapidly growing and exciting field of communications. With experiments ranging from a simple exploration of Total Internal Reflection to advanced concepts in telecommunications, students will be able to learn how new advances are enabling us all to keep in touch faster and more efficiently.

Limit: 30

B10 Outreach & Education from the Centre for Astrophysics & Supercomputing (1&2)

Dr Sarah Maddison,
Swinburne University of Technology

The Centre for Astrophysics and Supercomputing at Swinburne University continues to expand its outreach activities for primary and secondary schools. In this presentation, you will embark on a 3D journey through the VCE Astrophysics syllabus in one of our "AstroTours". We will also outline other initiatives the Centre is undertaking to inspire student engagement in science and technology through astronomy.

Limit: 30

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B11 The Helicopter: A context for Unit 2 Aerospace and Units 2 & 3 Motion (1&2)

Kelvin Barraclough, Gisborne SC

The session will describe how the helicopter functions and where Newton's laws come into play in its flight and focuses on what has happened to some pilots who have tried to operate outside Newton's limits. The information has relevance to the Detailed Study of Aerospace in Unit 2 as well as appreciation of Newton's Laws at work in the Unit 3 motion Area of Study. In Aerospace it is a wonderful example of the first dot point about balancing forces, moments, and the equilibrium needed in stabilising the helicopter.

Limit: 30

B12 Physics texts for 2009:

Jacaranda (C)

Dan O'Keeffe, Graeme Lofts

Presentation on the features of the Jacaranda text books and their support materials being prepared for the Revised Physics Study Design.

Limit: 30

B13 Getting the best out of your PASCO gear (C)

Doug Bail, Cider House ICT

You've got the equipment now's the chance to get some more background on getting the best out of it. A range of activities covering middle school and specific IB and VCE topics will be covered. Session is suitable for experienced users, those with new equipment from the 2007 science grants and those wishing to see their students enhance their learning and investigations. A free resource CD of activities will be provided for all participants.

Limit: 30

B14 Teaching Structures and Materials in VCE Physics (3&4) (REPEATED IN F4)

Anthony Somers, Ashwood College

A practical workshop that provides teachers with a resource package to support the teaching of the 'Investigating Structures and Materials' detailed study in Unit 3 VCE Physics. The workshop is a result of collaboration between Monash University Materials Engineering Department and Ashwood College to develop a practical and easy to follow method of teaching the detailed study. It will cover the main points of the unit with easy-to-use examples, demonstrations and practical experiments that require simple equipment found in most school science

laboratories. It also briefly outlines study and career options for students that show an interest in the area.

Limit: 30

**Lunch/Displays
1.00pm**

Session C - 1.50pm

C1 Investigating the Transistor (3&4) (REPEATED IN D1 AND F2)

Dan O'Keeffe, AIP Education Committee

A hands on session in which participants quickly assemble a simple one transistor circuit. They then measure voltage values to determine the current gain and the voltage gain. A signal generator can then be used to show AC operation. A CRO can be connected to observe the effect of biasing and increased signal voltage.

Limit: 30

C2 Using 'Speaker workshop freeware' for sound reproduction measurements (3&4) (REPEATED IN D2)

Simon Dick, Padua College

'Speaker Workshop' is a powerful freeware program that can be used to make accurate frequency response measurements of loudspeakers. Echoes, harmonic distortion, standing waves, room modes, off axis response, Doppler Effect and dipole vs monopole radiation are just some of the demonstrations that can be accomplished with relative ease and exceptional accuracy. Some hardware must be constructed to connect microphones and speakers to the computer, so this is not for the DIY phobic, however the construction of hardware is quite straightforward and well worth the effort. The presentation will show how to use the program and associated hardware for quality demonstrations and measurements, along with a discussion of the latest techniques in loudspeaker design. A selection of sample data, suitable worksheets and spreadsheets for students will be supplied, as well as documentation of how to construct all hardware. Warning DIY content.

Limit: 30

C3 Online Physics (G) (REPEATED IN D3)

Peter Razos, Trinity Grammar School

Animations, video, demonstrations, teaching ideas, self assessed multiple choice testing and lesson plans. All for free and online. Participants will be given access to this online resource and will be shown how to create their own online tests and use the vast array of resources on the site. Check out the site prior to the conference at www.dynamicscience.com.au/tester enter as a guest and go to curriculum material.

Limit: 20

C4 Powerful Learning Demonstrations (Cheap Pracs, Cheap Demos, Cheap Shots) (N) (REPEATED IN E3)

Colin Hopkins, Trafalgar High School and Rob Braidwood, Balwyn High School

These are a series of must do demonstrations, that we have found really keep the interest levels very high with students of all ages. Most are Year 11/12 Physics, but some can easily be modified and used in junior science. A resource CD will also be provided. Colin Hopkins and Balwyn High School have been supporting inexperienced and isolated Physics teachers since 2000. Suitable for inexperienced teachers and teachers new to Physics.

Limit: 30

C5 Teaching the Physics of Climate Change (1&2) (REPEATED IN F3)

Keith Burrows, AIP Education Committee

Confusion over climate change issues continues, and has not been helped by TV programs such as 'Swindle' on the ABC. Much of the discussion seems to revolve around the very unsatisfactory question 'which set of scientists can we believe?'. But what is the real science behind climate change? For example why does human produced CO2 matter, given that it is such a small proportion of the atmosphere. This session aims to provide teachers with some of the background to some of these questions and hopefully to share ideas on how to tackle this in the classroom.

Limit: 30

C6 Unit 4 Physics Pracs you can build or modify (3&4)

Ray Watterson, Waverley Christian College

A photoelectric practical that gives reasonable results can be made from \$10 of super bright LEDs. Optics using laser and IEC Diffraction kits also give good results.

Limit: 30

C7 Using Tainlab in Physics (C)

Stephen Howard, Tain Electronics

The Tainlab system offers a variety of valuable experiments relevant to the new course, particularly in mechanics and electronics. For Unit 3 "Electronics and Photonics", see the transistor amplifier kit which includes optical devices and full experiment details. It can be used with the Tainlab "virtual CRO" or with a conventional oscilloscope.

Limit: 30

C8 Alternative Energy with Professor Gizmo: Tony and Carol Brimson (1&2) (REPEAT OF B8)

Bruce Schmidt DEECD Grampians Region, Roy Rhoderick Ballarat High School, Stephanie Davison University of Ballarat

Limit: 30

C9 The Smarties model for electric circuits (1&2)

Dr Christina Hart, University of Melbourne

At the Physics Teachers Conference in 2006, my Keynote Lecture discussed the role of models in physics and physics learning, taking as an example the 'smarties' model for teaching electric circuits. Several participants asked for more information about the model and how it can be used to promote students' understanding of the highly abstract concepts of current and electrical energy. In this workshop I will take participants through the model, illustrating the questions and discussion that it can promote, and showing how it can be used to make explicit the meaning of some standard formulae.

Limit: 30

C10 The Physics of the Transistor (3&4)

Jim Royston, La Trobe University

A lecture on the basic physics of an NPN transistor, including discussion of the DC current gain (beta).

Limit: 30

C11 The Victorian Space Science Education Centre: A Fresh Approach to VCE Physics (1&2)

Michael Pakakis & Philip Spencer, Victorian Space Science Education Centre, (VSSEC)

VSSEC at Strathmore Secondary College is running innovative programs, covering scenario-based programs (Mission to Mars, Mission to a Space Lab) for Years 9 and 10 and professional development programs. VSSEC is also offering full-day VCE programs including a range of programs

suitable for VCE Physics. A program has been designed to meet the requirements of Detailed Study 3.1, Outcome 3.1. The theatre presentation, practical activities in the fully equipped laboratory and specially written software cover the topics listed in the outcome. Student workbooks include assessment material. There are excellent teacher resources. The program offers a fully assessable outcome for VCE Physics.

Limit: 30

C12 Physics is a branch of philosophy: Students love the big questions. (G)

Martin Mahy, De La Salle College

The study design only makes brief mention of the philosophy behind physics, e.g. "describe and explain movement...in terms of Aristotelian, Galilean and Newtonian theories". Physics began as "Natural Philosophy", but the exploration of the "Big Questions" has been asphyxiated by a heavy blanket of facts, formulas and technology. It is as if definition as a science has alienated physics from the world of philosophy as philosophy drifts away on the ship called "HMS Humanities". My experience is that students enjoy grappling with and discussing the ideas behind the laws of physics. Conversely, as a novice philosophy teacher, I have discovered that VCE Philosophy gives a lot of weight to modern science and its theories, via philosophers like Popper, Kuhn and Armstrong. So if the humanities people are glad to tip their hats to science, why shouldn't physics teachers tip theirs in return?

Limit: 30

C13 Physics texts for 2009: Nelson (C)

Neil Champion and Ranjith Dediwalage

Presentation on the features of Nelson text books and their support materials being prepared for the Revised Physics Study Design.

Limit: 30

C14 Vernier Labquest stand-alone data logging - a practical approach (C)

John Cadogan, Scientific

These sessions will be run as hands-on demonstrations of the Vernier Labquest data logger in a stand-alone situation. Sensors used will include Motion, Photogate, Microphone and Temperature. The approach will be to display some of the many functions of this equipment by relating its use to a number of experiments from the curriculum. The Ocean Optics Red Tide spectrometer and Vernier Logger Pro software will also be demonstrated using a HeNe laser spectrum.

Limit: 30

Session D - 2.55pm

D1 Investigating the Transistor (3&4) (REPEAT OF C1)

Dan O'Keeffe, AIP Education Committee

Limit: 30

D2 Using "Speaker workshop freeware" for sound reproduction measurements . (3&4)

(REPEAT OF C2)

Simon Dick, Padua College

Limit: 30

D3 Online Physics (G)

(REPEAT OF C3)

Peter Razos, Trinity Grammar School

Limit: 20

D4 Video analysis with Vernier Logger Pro (C) (REPEATED IN F5)

Gary Bass, CP Software

Logger Pro software has video analysis 'built-in'. This workshop will use the new Vernier LabQuest and a variety of probeware to sync the video with the data. Other videos (AFL, Olympics) will be analysed as well. CD with material will be provided, as well as link to 30 day free Logger Pro demo. Hands-on session, MacBook computers will be available, LabPro/LabQuest photogates, GO!Motion, WDSS will be used.

Limit: 30

D5 Why don't girls choose physics? What female Mathematical Methods students have to say (G)

Jane Coyle, Marian College

As part of my Master of Education I ran a study into the choices girls, in single sex schools, make about studying physics. This study was aimed at finding why so few girls choose physics and identifying ways we could encourage them to take physics. The study surveyed the Mathematical Methods cohort from three girls' schools. The selection of Mathematical Methods was used as an indicator of mathematical interest and ability. I assumed that students who have already shown themselves to be interested and capable in mathematics are likely candidates to study Physics. Selecting students from the single-sex environment was an attempt to identify issues other than that of gender imbalance in the classroom. Several findings relating to girls' education in physics and mathematics were found. In particular, in all girls environment, are gender stereotypes being challenged?

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This session will present some of my findings and hopefully engender some robust discussion!

Limit: 30

D6 Investigating the Characteristics of Photovoltaic Panels (1&2)

(REPEAT OF A7)

Saverio Ciccone, Overnewton Anglican Community College

Limit: 30

D7 Physics and Speech: Great things to do with Sound (3&4)

(REPEAT OF B7)

Russell Downie, PLC

Limit: 30

D8 Photonic technology: The Future of Engineering (3&4)

(REPEATED IN E4)

Tim Smith, La Trobe University

Photonic technology is explained in terms of emerging cutting edge technology.

From super high-speed broadband communications to medical monitoring to multi-sensory entertainment systems, photonics is the technology that is leading engineers and researchers into a new era of information processing. This presentation will outline some of the developing applications of photonics, explain their applications in research and development, as well as provide an overview of some simple optical and optoelectronic experiments to introduce VCE level physics students to this technology.

Limit: 30

D9 Enhancing Physics Teaching with Technology (C)

Phil Jones, The Logical Interface

In this workshop I examine a number of technologies for teaching senior physics, including i) Video analysis and TLI Motion video analysis software – ideal for analysing motion in one and two dimensions to produce position vs time graphs etc. ii) Interactive Physics: a superb tool for creating simulations in physics - from Kepler's Laws through to Electromagnetic simulations, iii) Using data loggers effectively including basic experiments and others such as force on current carrying wire, electromagnetic induction and apparent mass, iv) Simulation software - ideal for demonstrating experiments that are impractical in the secondary science lab and. v) Incorporating interactive Whiteboards into Science teaching.

Limit: 20

D10 Teaching Physics with Toys" (G)

Gary Cohen, Highvale High School

This session will explore, with examples, the strategies and benefits of using toys, both old and new, to teach Physics at senior as well as junior levels.

Limit: 30

D11 Designing an Assessment Task (N)

Dianne Wilkinson and Alan Reynolds, Box Hill High School

This session will outline the possible types of assessment tasks, discuss how to design them to ensure they give students an indication of how they are going, without making them too onerous for student and teacher, and how to pitch the level so that they are meaningful without being either tokenistic or too challenging.

Limit: 30

D12 Saving Time, Improving Learning: Using Units 3 & 4 Detailed Studies as Context (3&4)

Neil Champion, Williamstown High School

Detailed studies can provide the context through which much of the common areas of study may be taught. Planning a course based on this principle enables teaching time to be saved and opens up opportunities for better learning. This approach will be demonstrated for Unit 3 and Unit 4. There will be opportunity to explore the underlying planning process.

D13 Activities for Year 11 Astronomy (1&2)

Paul Fitzgerald,

Ivanhoe Girls' Grammar School

Participants in this session will have the opportunity try a variety of activities and experiments that do not require the use of a telescope. They could be used as part of the Unit 1 Astronomy detailed study or incorporated into their junior science program.

Limit: 30

Physics Oration

4pm

** People attending the Physics Day Program can also attend the Evening Program at no extra cost. Please ensure you have made your session selections for Session E & F on the Registration Form*

Evening Program

Session E - 7.00pm

E1 Changes to the Physics Study Design for 2009 – 2012, (G)

Repeat of Opening Address

Maria James, Science Manager, VCAA

E2 Teaching the Synchrotron DS (3&4) (Repeat of A2, B2)

Helen Lye, ACER and Dan O'Keeffe, AIP Education Committee

Limit: 30

E3 Powerful Learning Demonstrations (N) (REPEAT OF C4)

Colin Hopkins, Trafalgar High School, Rob Braidwood, Balywn High School

Limit: 30

E4 Photonic Technology: The Future of Engineering (3&4) (Repeat of D8)

Tim Smith, La Trobe University

Limit: 30

E5 Physics with Vernier LabQuest: Physics across gr5-yr12 (C) (Repeat of A14)

Gary Bass, CP Software

Limit: 30

Session F - 8.00pm

F1 Chief Assessor's Report on the Unit 3 & 4 Exams in 2005 (3&4)

(REPEAT OF A1 AND B1)

Bruce Walsh, Xavier College

As Bruce will have presented this session twice during the day, this will be a video replay of one of his earlier presentations.

F2 Investigating the Transistor (3&4) (REPEAT OF C1, D1)

Dan O'Keeffe, AIP Education Committee

Limit: 30

F3 Teaching the Physics of Climate Change (1&2) (REPEAT OF C5)

Keith Burrows, AIP Education Committee

Limit: 30

F4 Teaching Structures and Materials in VCE Physics (3&4) (REPEAT OF B14)

Anthony Somers, Ashwood College

Limit: 30

F5 Video analysis with Vernier Logger Pro (C) (REPEAT OF D4)

Gary Bass, CP Software

Limit: 30