| **Monday 31**  **October** |  | **ASET-NSW Conference Program** |  |  |
| --- | --- | --- | --- | --- |
|  |  | **Welcome and Housekeeping** | CB06.03.022 |  |
| **Session A** |  |  |  |  |
| Aboriginal and Torres Strait Islander Perspectives in Science, a practical workshop. | David  Harrington | This 1 hour workshop will provide background information and hands-on opportunities to explore practical examples that illustrate Indigenous science concepts contained in the senior science syllabus. The content is applicable for Chemistry, Biology, Earth and Environmental Science and Investigating Science and can also be extended to illustrate Physics content. Demonstrations and hands on activities will include the treatment of toxic compounds in foods, bush medicines, soaps and antiseptics, ochre, stone tool construction and mining, with additional workshop material informing fire management and firestick farming, issues pertaining to Indigenous Intellectual Property, land rights and natural resource management. The workshop will provide background information, practical notes and WHS advice for each activity as well as ideas regarding sourcing appropriate materials, engaging with your local AECG and Elders and culturally sensitive approaches to teaching and resourcing this material. The presenter, Dave Harrington, is an educator, ethnobotanist and researcher with a 25 year career working collaboratively with Aboriginal communities to record, preserve, protect and communicate cultural knowledge  David currently provides consultation to the education sector regarding teaching Indigenous Sciences including with the Sydney ArchDiocese and the DET Aboriginal Wellbeing Team. | Classroom  CB.06.03.053 | A1 |
| Agarose Gel Electrophoresis-Dye, DNA and Protein Separation | Jeanette Tran | In biotechnology, agarose gel electrophoresis is the cornerstone DNA separation technique. More recently, exciting innovations in the use of agarose gel electrophoresis are now enabling students to also engage with and explore both native and denatured protein separations using the same equipment previously used for DNA separation. This has  significant implications for the classroom. This ‘nuts and bolts’ hands-on workshop explores the fundamental concepts and principles of agarose gel electrophoresis and its basic application in DNA and protein separation, as well as introducing more advanced applications. Participants will be exposed to a range of cost effective equipment, from home-made through to cutting edge and learn how to:  • Prepare, set up and manage classroom activities  • Prepare and run dye, DNA, RNA and protein samples  • Visualise, record and analyse results  • Troubleshoot  The workshop is structured to allow continuous opportunities for discussion, to enable participants to explore the options that best address their needs. Participants will leave the session with the knowledge, practical skills and confidence to enable them to manage their students’ use of the technology in routine DNA and protein separations as well as for experimental investigations. Written resources are provided. | Wet lab  CB. 04.03.510 | A2 |
| Biology – Hands on Biology for both Senior and Junior Students | Matt Dodds | Come and learn how to use microscopy, modelling and more in the classroom. Several microscopes will be set up with new methods for microscopy being shared. Additionally, modelling for both junior and senior Biology will also be covered. Looking forward to sharing the microscale world with you. | Wet lab  CB.04.03.520 | A3 |
| How to test your equipment and do any minor repairs if needed | Bob Death | Bring along any equipment that you are having trouble with and Bob will endeavour to show you how to repair | Classroom  CB.06.03.052 | A4 |
| HSC Physics Hands-On Workshop : Diffraction | Simon Crook | Determining the wavelength of a laser and the spacing of diffraction gratings using diffraction patterns | Lecture theatre  CB.06.03.022 | A5 |
| Latest Tips, Tricks and New Features | RiskAssess | See how easy it is to carry out mandatory risk assessments of science experiments using RiskAssess.  • Latest features of RiskAssess will be demonstrated  • Learn the tricks and tips for creating labels for multiple chemicals on a single sheet  • Searching the laboratory scheduling,  • Making it mandatory to enter the number of groups,  • Downloading all chemicals or equipment used  • Backing up your risk assessments  • Using Student RiskAssess and more  • Questions welcome | Classroom  CB.06.03.051 | A6 |
| **Session AB** |  |  |  |  |
| Working with Glass and Simple things to make | Dale Carroll | Being able to handle glass tubing, rod and flat glass confidently is a useful skill to have. This session will show how to cut and bend glass tubing and rod using simple and inexpensive equipment that is often already in the science departments. We will also cover how to fix broken burette and measuring tops to make them useful again.  At the end of the session we will cover ideas on pieces of equipment that can be made with some basic skills, e.g. colorimeter, test tube racks, insulating box for calorimeter | Lab  CB.04.03.541 | AB1 |
| **Session B** |  |  |  |  |
| A Healthy Land  Measuring the environment with datalogging equipment | Stuart Lewis  Scientrific | A Healthy Land – Measuring the environment with datalogging equipment  This workshop will look at using datalogging to measure various environmental conditions in plants, the soil and water.  • Looking at chlorophyll in plants  • Investigating plant photosynthesis  • Investigating respiration  • Abiotic conditions  • Water analysis | Classroom  CB.06.03.051 | B1 |
| An intro to ROQED – Immersive and Interactive 3D Educational Simulations and Exercises | Ciderhouse | Introducing ROQED – fuelled by a program to educate a nation   * ROQED interactives are arguably the broadest and most accessible integrated range of digital science resources available anywhere * Over 1000 interactives across biology, chemistry, science and the environment are fully mapped to the Australian Curriculum for quick selection and run on just about any device. * Engage students, introduce new ideas, reinforce new ideas. * Dissect humans, animals and even rip out the skeleton of a T-Rex ! * This will be a session where you can come to “play” and take away information on a genuinely useful addition to the range of digital science resources | Classroom  CB.06.03.052 | B2 |
| Chemistry – Exploring Concentration and Rates of Reaction Through Colorimetry and A.A.S | Matt Dodds | Join Matt in learning new methods for exploring concentration using wireless colorimeter sensors. Many practical applications will be explored on both concentration and reaction rate. This has applications between both Chemistry and Biology . Every attendee will also leave with a single yet effective spectroscope that can be used in the teaching of Atomic Absorption Spectroscopy. | Lab  CB.04.03.520 | B3 |
| Genetic Technologies : Understanding PCR  Polymerase Chain Reaction | Jeanette Tran | This term has become ubiquitous in the last 2 years. Hear about how this important technology has become integral to understanding and fighting disease. Learn how a PCR test works, mRNA and how to demonstrate these in the classroom.  PCR is the technique that underpins almost all genetic technologies. The technology was the key to giving us the means of analysing and understanding DNA – the blueprint of life.  This method of amplifying DNA has given humans insight into genetic traits, means of diagnosing disease and a range of applications like forensic science.  This workshop will  • Provide activities and resources for teaching PCR in the classroom  • Breakdown of the key components of the PCR reaction and how it replicates DNA  • Discuss the newest developments in the technology for analysing DNA and RNA  You will receive resources by email at the conclusion of this workshop | Lab  CB.04.03.510 | B4 |
| Lab Management – work smarter, not harder | Jasmina Hasrolaj | Learning to work smarter, not harder can make you more effective and productive. When you work smarter, you reduce stress and procrastination and increase focus and effectiveness.  Using One stop shop, LABLOGGER, is not for everyone, takes time and energy to set up  Once set up  • It will improve your time management skills  • Set up your day the day before  • All WHS and SOP’s in one place  • Labels and RA  • How to  • Instructions  • Inventory  • Video instructions | Theatre  CB.06.03.022 | B5 |
| Leadership in the Lab | Westlab | In this action packed session we take a deep dive into how you can improve and fine tune your skills as a laboratory professional. This is truly a workshop for the individual who would like to take their science department to the next level and influence their colleagues with impressive management skills. Topics covered will include:  • Communication – How to communicate effectively and clearly with your colleagues.  • Sharing your ideas and getting buy-in from the team  • The ability to support your team by building their competence (ability to do the job well) and their confidence (the ability to do the job independently)  • To confidently delegate to staff knowing that the job will get done well  • Have constructive conversations with colleagues to build and strengthen relationships  • To look honestly and critically at your own leadership style – recognise & celebrate your strengths; and identify areas for development  All attendees will receive a complimentary gift from Westlab’s range of Innovative products | Classroom  CB.06.03.053 | B6 |
| **Morning Tea** |  |  |  |  |
| **Keynote Speaker** |  | Professor Ben Eggleton  <https://en.wikipedia.org/wiki/Ben_Eggleton> | Guthrie theatre  CB.06.03.022 |  |
| **AGM** |  |  | Guthrie theatre  CB.06.03.022 |  |
| **Lunch** |  |  |  |  |
| **Session C** |  |  |  |  |
| Making videos of Science Practicals | Dale Carroll | With 2020 being what it was, we wanted the students to be still able to see results from practicals that they would have done. For this to happen I have been making videos of these practicals. Making the videos has meant looking at how to best show the information and read displays as required, or the background to avoid other distractions. I will quickly introduce some of the methods I have used to achieve this. I will quickly go through collecting photos, videos and adding script to pages and putting a video together. These videos are now being used as an introduction to show students how to set up the experiment, or for those that are not present when the practical is done so they are still a good resource to have. | Lab  CB.04.03.541 | C1 |
| Datalogging and open ended experiments | Stuart Lewis  Scientrific | Are you looking for innovative ways of collecting data with some key experiments from the Australian Curriculum: Science?  Are you looking for a way to extend current experiments to engage students and connect to STEM? Are you looking for a pathway from a simple experiment to an open-ended investigation? This workshop investigates several experiments that start out simple, push to complex ideas and end in the realm of open-ended experiments. Participants to this workshop will get hands-on experience with datalogging technology, focusing on sections of the physics curriculum. | Classroom  CB.06.03.051 | C2 |
| Hints, Tips and Tricks with your PASCO gear | Ciderhouse | A broad-based session, this will cover the basics for people who are new to the PASCO range of electronic measure through to advanced techniques in utilising and calibrating sensors .  • What needs calibrating, why and what not, what are the limitations and opportunities presented by different sensors.  • What do we do with old gear so it continues to be useful.  • We will also investigate novel techniques and approaches to buy practical activities including mandatory pracs  • There will be plenty of opportunities to ask questions and have them answered.  • BYO PASCO equipment if you would also like to problem solve any specific issues | Classroom  CB.06.03.052 | C3 |
| In da Pendant Genes | Jeanette Tran | Prepare your own DNA which you will take away wearing in a pendant!  In this session, cells from the inside of your mouth (buccal cells) are harvested, lysed, enzyme treated and the DNA extracted. This DNA is then collected, sealed in a glass pendant and worn around your neck.  In Da’ Pendant Genes is an activity that was adapted for the Queensland Government’s BioBus mobile biotechnology exhibition for schools and is an excellent example of DNA extraction. This simple lab activity requires no specialized equipment or stains, yet allows you to conduct a real-world laboratory procedure that can be used to extract high quality DNA from a wide variety of organisms. This DNA could be used in a number of further laboratory applications if desired.  All participants will receive an Instruction Manual for this activity. | Lab  CB.04.03.510 | C4 |
| Lean up your Lab | Westlab | LEAN Technology is a proven system that has been highly effective in the manufacturing sector for many years and it is becoming increasingly popular in educational institutions including laboratories in Schools, TAFE and University teaching labs. The presentation is fun, engaging and beneficial to anyone involved in laboratory management.  Core topics and activities cover:  •The power of visual management  •Impact of workflow on efficiencies  •The 5S Principals  All attendees will receive a complimentary gift from Westlab’s range of Innovative products | Classroom  CB.06.03.053 | C5 |
| Physics – Practical Experiments for Senior Physics | Matt Dodds | Come and get hands on with a range of experiments for senior Physics that can also be incorporated into junior science. All of these experiments are linked to the syllabus and have prepared notes to accompany them. We will be covering a range of topics from Electromagnetism, Waves, Thermodynamics, Quantum Physics and Forces. | Lab  CB.04.03.520 | C6 |
| **Tuesday 1st November** |  |  |  |  |
|  |  | **Welcome and Housekeeping** | Guthrie theatre  CB06.03.022 |  |
| **Session D** |  |  |  |  |
| Chemistry – Exploring Concentration and Rates of Reaction Through Colorimetry and A.A.S | Matt Dodds | Join Matt in learning new methods for exploring concentration using wireless colorimeter sensors. Many practical applications will be explored on both concentration and reaction rate. This has applications between both Chemistry and Biology . Every attendee will also leave with a single yet effective spectroscope that can be used in the teaching of Atomic Absorption Spectroscopy. | Lab  CB.04.03.520 | D1 |
| Exploring Solar Energy for Middle School Science | Stuart Lewis  Scientrific | A STEM approach to exploring solar energies will see participants designing, making and testing a solar car to race against each other! Who can design and build the fastest machine? The approach used involves students conducting a scientific investigation to gather data on relevant variables to improve performance of the car. The results are  incorporated into the design, development and testing of the vehicle creating an integrated STEM approach to learning. Participants will have the opportunity to conduct some investigation then design and build a solar car. The content fits well with Year 8 forms of energy and Year 9 energy transfer topics. | Classroom  CB.06.03.051 | D2 |
| Genetic Technologies : Understanding PCR  Polymerase Chain Reaction | JeanetteTran | This term has become ubiquitous in the last 2 years. Hear about how this important technology has become integral to understanding and fighting disease. Learn how a PCR test works, mRNA and how to demonstrate these in the classroom.  PCR is the technique that underpins almost all genetic technologies. The technology was the key to giving us the means of analysing and understanding DNA – the blueprint of life.  This method of amplifying DNA has given humans insight into genetic traits, means of diagnosing disease and a range of applications like forensic science.  This workshop will  • Provide activities and resources for teaching PCR in the classroom  • Breakdown of the key components of the PCR reaction and how it replicates DNA  • Discuss the newest developments in the technology for analysing DNA and RNA  You will receive resources by email at the conclusion of this workshop | Lab  CB.04.03.510 | D3 |
| How to test your equipment and do any minor repairs if needed | Bob Death | Bring along any equipment that you are having trouble with and Bob will endeavour to show you how to repair. | Classroom  CB.06.03.052 | D4 |
| **Session DE** |  |  |  |  |
| Working with Glass and Simple things to make | Dale Carroll | Being able to handle glass tubing, rod and flat glass confidently is a useful skill. This session will show how to cut and bend glass tubing and rod using simple and inexpensive equipment that is often already in the science departments. We will also cover how to fix broken burettes and measuring cylinder tops to make them useful again.  At the end of the session we will cover ideas on pieces of equipment that can be made with some basic skills, e.g. colorimeter, test tube racks, insulating box for calorimeter. | Lab  CB.04.03.541 | DE1 |
| **Session E** |  |  |  |  |
| Agarose Gel Electrophoresis - Dye, DNA and Protein Separation | Jeanette Tran | In biotechnology, agarose gel electrophoresis is the cornerstone DNA separation technique. More recently, exciting innovations in the use of agarose gel electrophoresis are now enabling students to also engage with and explore both native and denatured protein separations using the same equipment previously used for DNA separation. This has  significant implications for the classroom. This ‘nuts and bolts’ hands-on workshop explores the fundamental concepts and principles of agarose gel electrophoresis and its basic application in DNA and protein separation, as well as introducing more advanced applications. Participants will be exposed to a range of cost effective equipment, from home-made through to cutting edge and learn how to:  • Prepare, set up and manage classroom activities  • Prepare and run dye, DNA, RNA and protein samples  • Visualise, record and analyse results  • Troubleshoot  The workshop is structured to allow continuous opportunities for discussion, to enable participants to explore the options that best address their needs. Participants will leave the session with the knowledge, practical skills and confidence to enable them to manage their students’ use of the technology in routine DNA and protein separations as well as for experimental investigations. Written resources are provided. | Lab  CB.04.03.510 | E1 |
| Servicing/cleaning microscopes | Liam Aggett  Edu Supplies | How to troubleshoot and maintain your microscopes | Classroom  CB.06.03.051 | E2 |
| Biology – Hands on Biology for both Senior and Junior Students | Matt Dodds | Come and learn how to use microscopy, modelling and more in the classroom. Several microscopes will be set up with new methods for microscopy being shared. Additionally, modelling for both junior and senior Biology will also be covered. Looking forward to sharing the microscale world with you. | Lab  CB.04.03.520 | E3 |
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| Under Pressure | Ben Newsome  Fizzics Education | Learn simple ways to teach about using both supermarket materials as well as liquid nitrogen & more | Guthrie theatre  CB.06.03.028 |  |
|  |  | **Morning Tea** |  |  |
| **Session F** |  |  |  |  |
| Coffee and Chat with Karen | Karen Mellenbergh | This is an opportunity for you to have a chat with an experienced labbie and ask any questions that may be on your mind.  • What does GHS stand for and what do I need to know ?  • How do I deal with difficult situations?  • How should I set up my preproom ?  • What are my legal WHS requirements ?  • Can I say “NO”  • How can I stay organised ?  • Any other pressing questions  Karen Mellenbergh has been a laboratory technician for over 20 years.  Bring your coffee/tea/water and your list of questions ] | Classroom  CB.06.03.051 |  |
| Exolab 1- 10  Plants in Space | Ben NEWSOME  Fizzics Education | Find out more about an International Space Station Experiment held with schools across Australia and beyond.  How can you get involved in 2023? | Guthrie Theatre  CB.06.03.022 |  |
| Leadership in the Lab | Westlab | In this action packed session we take a deep dive into how you can improve and fine tune your skills as a laboratory professional. This is truly a workshop for the individual who would like to take their science department to the next level and influence their colleagues with impressive management skills. Topics covered will include:  • Communication – How to communicate effectively and clearly with your colleagues.  • Sharing your ideas and getting buy-in from the team  • The ability to support your team by building their competence (ability to do the job well) and their confidence (the ability to do the job independently)  • To confidently delegate to staff knowing that the job will get done well  • Have constructive conversations with colleagues to build and strengthen relationships  • To look honestly and critically at your own leadership style – recognise & celebrate your strengths; and identify areas for development  All attendees will receive a complimentary gift from Westlab’s range of Innovative products | Classroom  CB.06.03.053 |  |
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| An intro to ROQED – Immersive and Interactive 3D Educational Simulations and Exercises | Ciderhouse | Introducing ROQED – fuelled by a program to educate a nation  • ROQED interactives are arguably the broadest and most accessible integrated range of digital science resources available anywhere  • Over 1000 interactives across biology, chemistry, science and the environment are fully mapped to the Australian Curriculum for quick selection and run on just about any device.  • Engage students, introduce new ideas, reinforce new ideas.  • Dissect humans, animals and even rip out the skeleton of a T-Rex !  • This will be a session where you can come to “play” and take away information on a genuinely useful addition to the range of digital science resources | Classroom  CB.06.03.052 |  |
| **Lunch** |  |  |  |  |
| **Session G** |  |  |  |  |
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| Key experiments: Inquiry approaches using Vernier Data Loggers in High School Science | Stuart Lewis  Scientrific | Key experiments: Inquiry approaches using Vernier Data Loggers in High School Science  Are you looking for new ways of collecting data related to experiments in the Australian  Curriculum?  Multiple workstations will be set up for participants to experiment with support from our  presenter. The experiments may include:  • Boyle’s Law and chemical reaction rates  • Spectroscopy and Beers Law  • Newtons laws of motion  • Electrical induction and electromagnetism  • Respiration  Ideas for further investigations will also be explored | Classroom  CB.06.03.051 |  |
| Microbiology in Schools | Jeanette Tran | With the new HSC syllabus, there is an opportunity to conduct a range of independent learning projects in Biology. Microbiology offers a rich array of meaningful learning experiences.  This session utilises a combination of discussion and hands-on. We will be exploring the ways you can use microbiology to bring biology practical teaching to life.  This session will also address  • The ABC of media : preparation, sterilization and storage  • Characteristics of selected low risk organisms  • Pure culture techniques, subculturing and preservation  • Control of microbial growth-physical and chemical methods  As well as practical components associated with  • Serial Dilutions and Enumeration  • Bacterial Transformation  • Safe investigation and characterising of soil bacteria  • Water quality testing – chromogenic analysis  • Bioremediation by oil eating bacteria | Lab  CB.04.03.510 |  |
| Physics – Practical Experiments for Senior Physics | Matt Dodds | Come and get hands on with a range of experiments for senior Physics that can also be incorporated into junior science. All of these experiments are linked to the syllabus and have prepared notes to accompany them. We will be covering a range of topics from Electromagnetism, Waves, Thermodynamics, Quantum Physics and Forces | Lab  CB.04.03.520 |  |
|  |  |  |  |  |
|  |  | Melbourne Cup | Guthrie Theatre |  |