

August 2019 **SASTA**

Newsletter of the South Australian Science Teachers Association Inc.



Latest events

For the latest events and conference information go to:
www.sasta.asn.au

For information about science competitions go to:
www.oliphantscienceawards.com.au

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Conferences & Events

Stage 2 Marking & Moderation Workshops

- **Chemistry** – Friday 30 August 2019
- **Psychology** – Friday 6 September 2019
- **Biology** – Friday 6 September 2019
- **Physics** – Friday 13 September 2019

See page 4 for more details.

Stage 2 Exam Prep Seminars

- **Biology** – Saturday 31 August 2019
- **Physics** – Saturday 7 September 2019
- **Psychology** – Saturday 7 September 2019
- **Chemistry** – Saturday 14 September 2019

See page 6 for more details.

Early Career Teacher Conference

Friday 11 October 2019

See page 5 for more details.

STEM Conference

Friday 29 November 2019

Call for workshops now open. See page 5 for more details.

Oliphant Science Awards

Open Day

Sunday 25 August 2019

See page 11 for details or go to:

www.oliphantscienceawards.com.au



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South Australian Science Teachers Association Inc.

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Association member of the Australian Science Teachers Association (ASTA)

Supporting Teachers of Science | Advancing Science Education





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Newsletter copy deadlines 2019

(Advertising deadlines one week earlier)

Edition	Deadline
November	10 October

Advertising

Advertising rates & booking form available online at www.sasta.asn.au

Views expressed in this newsletter are not necessarily those of SASTA or the editors. Whilst every effort is made to be factual, no liability is accepted for the accuracy of information presented.

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Adhering to the following guidelines would be appreciated:

- Save as a Microsoft Word document
- Tables to be set up as text with one tab between columns and a return at the end of each row.
- For spelling please use the Macquarie Dictionary and where several alternatives are listed, use the first. The exception to this is when you are citing, referencing or quoting directly from a source which uses alternative spelling.
- Photographs should be high quality untouched digital photographs.

From the President



As we draw closer to the 50th anniversary of the Apollo 11 moon landing, the well-chosen theme for National Science Week 'Destination Moon: More Missions, More Science' is gathering momentum in many science classrooms throughout South Australia.

The scientific achievement of the moon-landing was extraordinary.

The Apollo 11 spacecraft was launched from Cape Kennedy—now called Cape Canaveral—Florida, on 16 July 1969, and was only the fifth crewed Apollo mission. The three astronauts on board, Neil Armstrong, Edwin 'Buzz' Aldrin Jr and Michael Collins, displayed a great deal of courage and trust in the design process behind the spacecraft which would take them to the moon and back.

Four days later, on 20 July, Neil Armstrong and Buzz Aldrin crawled through a tunnel from the command module Columbia into the lunar module Eagle. On the twelfth orbit of the moon, the lunar module separated from Columbia. Armstrong and Aldrin piloted Eagle to the surface of the moon, touching down in the moon's Sea of Tranquility. The internationally famous radio message from Armstrong to Houston was issued at 4:17 pm US EDT on 20 July: "Houston, Tranquility Base here. The Eagle has landed."

It was not until several hours later at 10:56 pm that Neil Armstrong climbed out of the lunar module onto the surface of the moon, uttering the words: "That's one small step for man, one giant leap for mankind."

About twenty minutes later, Buzz Aldrin joined Neil Armstrong on the moon's surface, and they conducted some scientific tasks during their moon walk:

- They set up a device to measure the composition of the solar wind reaching the moon.
- They installed a device to receive laser beams from astronomical observatories on Earth, which could determine the exact distance of the moon from the Earth at any time.
- A passive seismometer was set up to measure moonquakes and collect data of future meteor impacts.
- The astronauts took many photographs of the moon's surface and harvested about 23 kg of rock and soil samples. One small moon rock may be seen at the Tidbinbilla Space Station in the ACT; its display case protects it from the oxidising atmosphere of the Earth.

Less than 24 hours were spent by the two astronauts on the surface of the moon: 21 hours and 38 minutes elapsed in total before they returned to the Eagle and used its ascent stage to launch back into lunar orbit. Eagle conducted various manoeuvres to enable it to dock with Columbia, and Columbia's return to Earth began soon afterwards.

Buzz Aldrin's observations are very interesting. In 1998, he described the moon's surface as being covered in a dark grey "talcum powder-like dust" with a variety of scattered pebbles, rocks, and boulders. "If you examine it under a microscope, you can see it's made up of tiny, solidified droplets of vaporised rock resulting from extreme velocity impacts," he said in an interview published by Scholastic.

He said that his term "magnificent desolation" referred in part to the achievement of being there, and in part to the "eons of lifelessness". Aldrin also described weightlessness as "one of the most fun and enjoyable, challenging and rewarding, experiences of spaceflight".

"Perhaps not too far from a trampoline, but without the springiness and instability," he said.

On 24 July 1969, eight days after launching from Cape Kennedy, the Apollo 11 crew splashed down in the Pacific Ocean southwest of Hawaii. The crew were quarantined for 21 days while they were being checked for any diseases they may have brought back from the moon. Their mission had concluded, but the science around their journey still continues.

Vanessa Fay

Term 3 Professional Learning

Stage 2 Marking and Moderation Workshops

An opportunity for teachers to discuss assessment and the application of the performance standards to samples of work, as well as to have invaluable professional input with their own student samples. An opportunity to readjust marking standards prior to final moderation.

Tasks that will be discussed include the deconstruct and design task, science as a human endeavour investigation and marking of SATs, in particular short answer and extended response questions, including SHE responses.

Morning tea and lunch will be provided.

REGISTRATION FEES: Personal member \$145, Corporate member (SA School) \$185, Student member \$50, Non-member \$225

Chemistry

Friday 30 August 2019, 9.00 am – 3.00 pm
Underdale High School
Presenter: Glen Arthur

Psychology

Friday 6 September 2019, 9.00 am – 3.00 pm
Education Development Centre
Presenter: Kate Cutts

Biology

Friday 6 September 2019, 9.00 am – 3.00 pm
Education Development Centre
Presenter: Kathy Adams

Physics

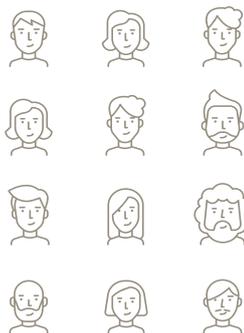
Friday 13 September 2019, 9.00 am – 3.00 pm
Education Development Centre
Presenter: Michael Smith

More information and register at
www.sasta.asn.au/professional_learning

Why should you support the credit union that supports SA's educators?



We help more than **10,000** educators with their banking



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Teachers of SA Facebook community



Awarding SA's quality teachers through our 18 annual awards



Primary sponsor of CEASA World Teachers' Day Awards



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Over **660** school staff rooms visited each year

Established by South Australian teachers over 60 years ago



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The Early Career Teachers Conference is aimed at teachers in their first five years of teaching science/STEM or those who are new to a specialist science or STEM role.

This is an opportunity for early career and pre-service teachers to engage in interactive learning activities that will deepen your understanding of the science content and will give you the skills and resources to engage your students in learning.

The program includes specialised hands-on workshops for both primary and secondary teachers.

Friday 11 October 2019, 8.30 am – 4.30 pm
Immanuel College, Morphett Road, Novar Gardens

Personal members	\$145
Student members	\$50
Corporate members	\$185
Non-members	\$225
Student non-members	\$90

Go to www.sasta.asn.au/professional_learning



Call for workshops

29 November 2019
Adelaide Botanic High School

The 2019 STEM Conference will bring together classroom teachers, leaders in education and businesses who are interested in sharing and exploring teaching methods, tools, resources, and related activities for implementing STEM education into our schools and communities.

The conference is currently seeking presentations that address a range of the content and pedagogies of the Australian Curriculum: Mathematics, Science, Design & Technology and ICT.

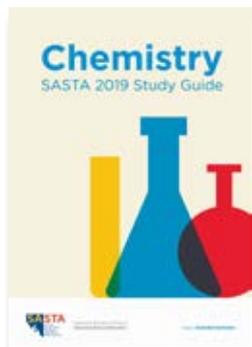
Presentations should be 60 minutes long and actively involve participants in the professional learning through a practical and investigative approach.

Sessions that relate to real-world examples of contemporary STEM are encouraged.

Workshop proposals must be submitted before 27 September.

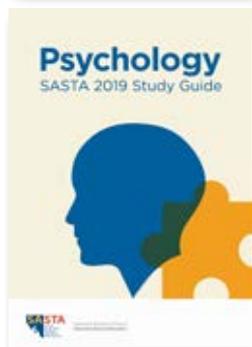
For more information, go to www.sasta.asn.au/professional_learning

Preparing Students for Stage 2 Exams



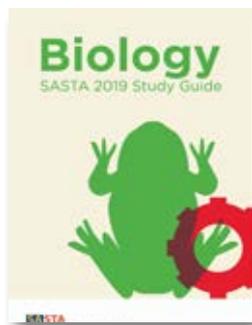
2019 SASTA Study Guides

SASTA Study Guides are the complete resource for students preparing for Year 12 SACE exams. These guides include questions with worked solutions covering each topic in the subject outline and address all sections of the exam.

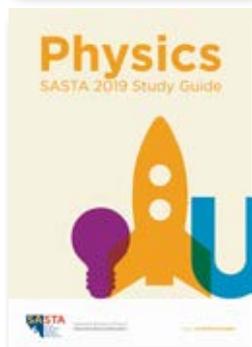


The Biology, Chemistry and Physics study guides have been aligned to the new SACE Stage 2 Curriculum.

Initial copies sold out very quickly so more copies have been printed! All SASTA Study Guides are \$29 each (plus postage if applicable) and are currently available for schools and individuals to purchase.



Please email purchase orders to office@sasta.asn.au or order online at sasta.asn.au/resources/study_guides_stage_2



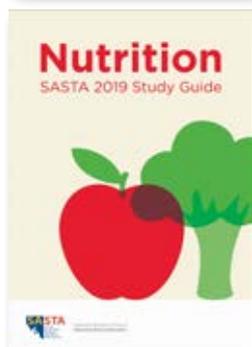
Stage 2 Trial Exams

These exams are newly written for 2019 and are now available to purchase. This vital resource will familiarise teachers and students with the SACE Stage 2 exam format. Teachers will be able to use the resource with students, as a stand-alone assessment tool or to develop exam preparation skills.

- Nutrition
- Psychology
- Biology
- Chemistry
- Physics

\$132.00 per exam.

Exams can only be ordered by emailing office@sasta.asn.au or by faxing your purchase order to 8354 0008.



Exam Prep Seminars

These seminars help students to get maximum benefit from their study time. Attendees will:

- meet the Study Guide editorial teams
- discuss exam techniques and receive hints for answering questions
- discuss the Chief Examiner's comments for last year's exam paper
- discuss the extended response requirements.

Attendees should bring their Study Guides with them.

Biology

Saturday 31 August 2019

2.30–5.00 pm

The University of Adelaide
Napier Building

Physics

Saturday 7 September 2019

2.30–5.00 pm

The University of Adelaide
Napier Building

Psychology

Saturday 7 September 2019

2.30–5.00 pm

The University of Adelaide
Napier Building

Chemistry

Saturday 14 September 2019

2.30–5.00 pm

The University of Adelaide
Napier Building

All seminars are \$15 per attendee. Teachers accompanying a class group are free.

Register at sasta.asn.au/student_activities/exam_prep_seminars

Applications Open for Bush Blitz TeachLive 2019

Bush Blitz TeachLive is an exciting professional learning opportunity for teachers who participate as research assistants for leading scientists on Bush Blitz expeditions. While in the field, teachers share this experience with their students through Skype and other online tools, and through the Bush Blitz TeachLive website (bushblitz.teachlive.org.au) where they post blogs and share photographs.

WHERE:

Little Desert National Park, Victoria

WHEN:

Thursday 24 October – Thursday 31 October 2019

DURATION:

8 days (6 school days).

Depending on your location, you might need an extra day either side of these dates to travel to/from site.

WHO:

Five Australian teachers who teach years 4–12.

One place will be allocated to an early career teacher (teaching three years or less).

Two places will be reserved for members of the state and territory Science Teacher Associations.

HOW:

To apply you will need to complete an online application form addressing three selection criteria as well as submitting a short two-minute video describing why you would like to be involved in this Bush Blitz TeachLive expedition.

All travel, accommodation, board and full teacher replacement costs will be funded.

Applications close 25 August 2019

For further information and application details go to asta.edu.au/programs/bush_blitz_teachlive

Biology: Levels of Life

Brian LeCornu and Tony Diercks

Biology: Levels of Life – Australian Curriculum Edition Textbook, \$61.20

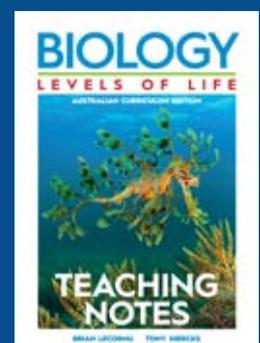
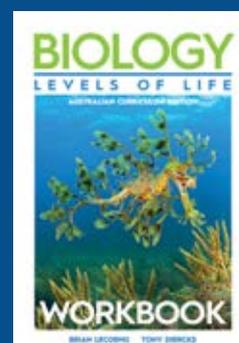
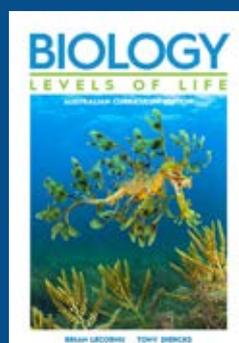
This textbook is from the authors of the popular Biology: Levels of Life materials, used by teachers and students since 2000. It provides detailed coverage of all the content (Science Understanding) of the Biology subject outline to be taught at Stage 2 from 2018. The new content is relevant, up-to-date and addresses **Science as a Human Endeavour**, with many examples throughout. It is attractively presented in full colour with numerous links to videos, animations, and useful resources. The textbook is divided into four topics, with each topic presented in chapters designed to make the material easy to follow, with study questions at the end of each chapter.

Biology: Levels of Life – Australian Curriculum Edition Workbook, \$23.95

This workbook has been written specifically to complement the textbook. It covers all Science Understandings of the Biology subject outline and can be used in conjunction with the textbook or it can be used effectively on its own as an aid for understanding and revision. By completing answers to the workbook questions, students will develop their knowledge and understanding of biological principles and concepts relevant to the course.

Biology: Levels of Life – Teaching Notes, \$120.00

Teachers will find the Teaching Notes invaluable in ensuring that all Science Understandings are covered for each of the four topics. The book is designed so that when open on the desk the pages lay flat and the notes can be seen easily at a glance. There is also additional information and there are teaching tips throughout. The Workbook answers will assist teachers in explaining concepts to students. Students should be encouraged to attempt the Workbook questions before being provided with the answers.



CONASTA 68 – Uncharted Territory

Darwin, 7–10 July

Dina Phan is a SASTA member who was awarded a Ruth Dircks scholarship to attend CONASTA 68. The following is her reflection on the experience.



Yes: that's a termite mound!

After attending STEM X in 2018, and being encouraged to apply for a CONASTA scholarship, I decided to give it a go. I remember sitting in the staff room at lunch time, when I read the e-mail, congratulating me on my successful application (SASTA, you must be so proud of your members – two years in a row!). I managed to contain my excitement before sending a few texts to family and friends. I was finally going to CONASTA! But must remember to call Vic back first, to confirm my acceptance. I forgot... Fortunately, he called me the next morning – thanks, Vic! And thank you to Ruth Dircks, and the rest of the ASTA team for this amazing opportunity.

Upon arriving in Darwin, I wish I could say I went exploring and sussed out the city's hot spots, but



Whip ray at the Territory Wildlife Park.

I was just so tired! There aren't many direct flights between Adelaide and Darwin – I had to go via Brisbane... Checked-in, then napped for a good two hours, before messaging some friends to organise meeting up for our pre-conference tour the next day, at the Territory Wildlife Park.

Our tour guide was the amazing, world-renowned artist, Jasmine Jan. Jasmine has a background in science, as well as art, and has contributed to the educational community through both teacher and student workshops, and running camps and activities at the park. Jasmine's passion for art and science is evident in the way she talks, and dedicates herself to not only her work in the park, but also her own art. Jasmine also involves the community in science and art through projects such as the knitted coral reef, which can be seen in the aquarium at the park. She has really inspired me with her knowledge and passion, and my take-away message from her is 'science by stealth' – where the learner doesn't even know they're learning



Knitted coral reef by Jasmine Jan.

science! Finding creative ways to impart knowledge, and hook learners in, particularly in an area where many people have a fixed mindset. For us science teachers, I would also add that she had us doing 'art by stealth'!

One of the workshops I attended was about challenging students to design their own investigations, thereby developing their own understandings. Our presenter, Pat Dove, had us creating brain cross-sections using craft supplies, and designing our own method of investigating the energy efficiency of different balls. It was fun, hands-on, and creativity and art were certainly two prevalent themes throughout. Again. Hmm... An argument for the STEM versus STEAM debate? Not getting into this one today though!



Brain cross section using craft supplies

As I write this, I have "West Coast Customs" on the TV in the background. Their team perfectly demonstrates why STEAM skills and knowledge are needed in today's world, and into the future. They show why those 4Cs of 21st century learning are important, and this is all evident in the amazing car they created (look up Tron Audi R8!). The car would not have been possible without the mechanics, design artists, painters, textile workers, electricians, and even someone to manage the project and have a vision for what they'd like achieved. This is what we need our kids to be doing, and CONASTA has given me so many ideas for how to take project-based learning so much further. Beginning with my own subject areas, I want to develop and implement a plan for integrated learning, which will eventually lead to working alongside other subject teachers.

CONASTA was an amazing PD experience (aside from becoming midge fodder...), and the networking



Using a VR headset.

opportunities were invaluable. The social functions and pre/post-conference activities are incredibly amazing and fun – I'd highly recommend going to all of them if you can! Keep an eye out for when the Ruth Dircks Scholarship applications open, and apply for that. Maybe I'll see some of you in Canberra next year – let's face it, I'm not *not going* back to CONASTA now. And no midges in Canberra...

Dina Phan
Woodville High School





The entries are coming in and judging time is approaching!

From Monday 22 July

Science Writing, Scientific Inquiry, Games and Multimedia entries are sent out to judges. These must be judged and returned to SASTA by Friday 16 August.

Saturday 10 August 9.00 am – 1.00 pm

Judging of Computer Programming and Robotics entries. Students must book an appointment online.

Friday 23 August 9.00 am – 5.00 pm

Crystal Investigation, Models and Inventions, Photography and Posters are to be delivered to Festival Functions, 292 Findon Road, Findon. Ensure identification labels are firmly and clearly attached to each entry.

Saturday 24 August 9.00 am – 1.00 pm

Judging of Crystal Investigation, Models & Inventions, Photography and Posters at Festival Functions, 292 Findon Road, Findon.

Sunday 25 August 12.00 – 4.00 pm

Open Day at Festival Functions, 292 Findon Road, Findon. See opposite page for more information.

Monday 26 August 9.00 am – 5.00 pm

ALL projects MUST be collected from Festival Functions, 292 Findon Road, Findon.

Please see **conditions of entry** at oliphantscienceawards.com.au for more information including procedures for any uncollected entries.

All winners will be notified directly and invited to the presentation ceremony to be held Friday 20 September.

Open Day

Sunday 25 August, 12–4 pm

Festival Functions, 292 Findon Road, Findon

Entry by gold coin donation

Bring yourself, your students, and your family to the Oliphants Open Day – a day all about celebrating science!

All the winning competition entries will be on display, plus all manner of fascinating live presentations on stage, as well as the chance to get hands-on! Details below...

Science show program

TIME	WHAT'S ON	Southern Stage	Northern Stage
12.15	RAPTOR RANGER Warrawong Wildlife Sanctuary Thanks to the Warrawong2U team, get up close to some of Australia's deadliest hunters and learn more about predators and prey!		
12.45	THE SPECTACULAR CHEMISTRY SHOW The University of Adelaide Step right up to this exciting show featuring a range of thrilling, attention grabbing experiments and demonstrations set to inspire and delight any young scientist!		
1.15	GRAVITY - EINSTEIN VS NEWTON Mobile Science Education Relativity is truer, but Newton's Laws got us there just fine.		
1.45	DINOSAURS DOWN UNDER Heaps Good Productions Australia has an amazing pre-history; join Professor Flint on a journey through this amazing land known to the world as the 'Land Down Under'		
2.15	THE SHAPES OF THE UNIVERSE Mobile Science Education How was the Big Bang Theory developed?		
2.45	AMAZING ANIMALS STAGE SHOW Nature Education Centre The Nature Education Centre will share some of their amazing native animals with you.		
3.15	ASTRONOMY & OUR INTUITION Mobile Science Education Why does astronomy break our common-sense way of thinking? Come and find out!		

Other attractions

Competition display

View the winning entries in SA's largest student science competition!

Come-and-try stations

Get hands-on with **WARRAWONG WILDLIFE SANCTUARY**

The **EPIC FLIGHT COMMITTEE** brings to life the first flight from England to Australia! Dress-up like an aviator, see medals and models of historical flights, and test your engineering design skills by making a paper plane for the longest throw competition!

Play around in space with the **SOUTH AUSTRALIAN SCIENCE TEACHERS ASSOCIATION** – Packing for Space

Cube Puzzle, Mystery Message Game, Air Table Challenge and Moon Craters

Operate interactive gadgets with **TECH SPACE LEARNING/HALLETT COVE ROBOTICS CLUB**

Get building with the **SOUTHERN BRICKS LEGO USERS GROUP**

Walk the Space Tunnel with **MOBILE SCIENCE EDUCATION**

Fun and food

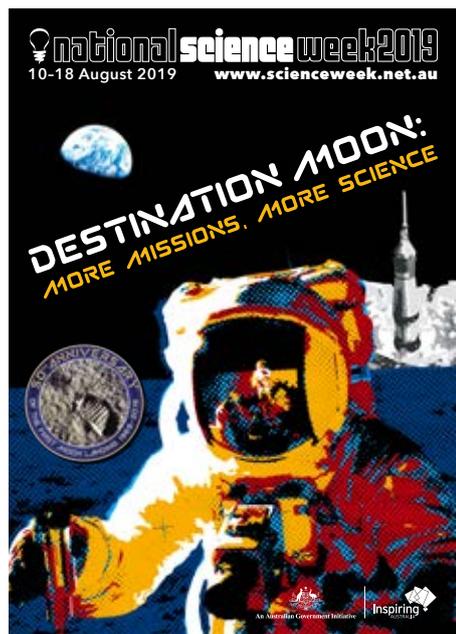
Purchase a sausage or burger from the Regency Park Rotary Club **BARBECUE**

– proceeds go towards the National Youth Science Forum

FAIRY FLOSS giveaways from Fairy Floss Galore

HOT BEVERAGES to purchase from Festival Functions

Science themed **FACE-PAINTING** from Madhatterz Parties (gold coin donation)



National Science Week

10-18 August 2019

Destination Moon: More missions, more science is the school theme for National Science Week in 2019.

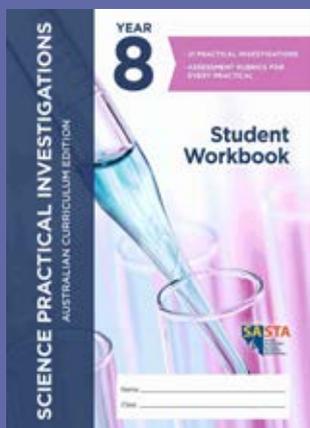
This theme is a way for teachers and their students to discover past missions to the Moon and space programs that have solved some of the seemingly unsolvable problems—and current and future space programs, operations and missions. Many of these use big picture thinking in science to solve problems, and technology, engineering and mathematics to design new solutions.

A 76-page Resource Book of Ideas as well as other downloadable resources are freely available from scienceweek.net.au.

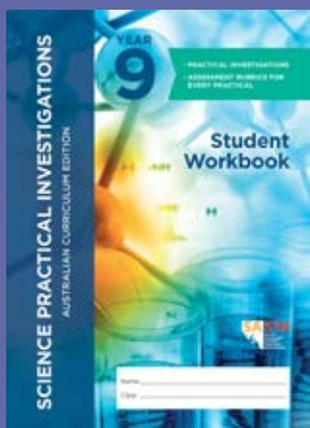
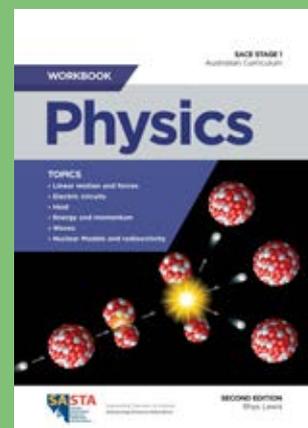
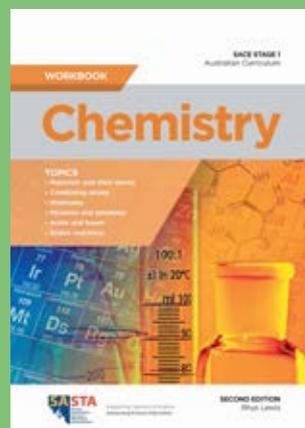
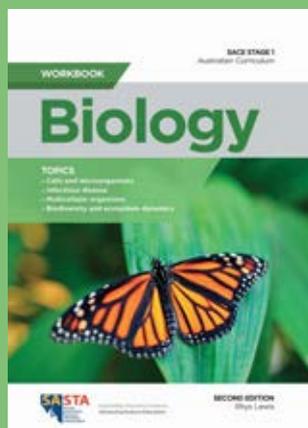
SASTA will also be producing a Science Week resource which will be available to download from the members' area of the SASTA website.

Year 8 & 9

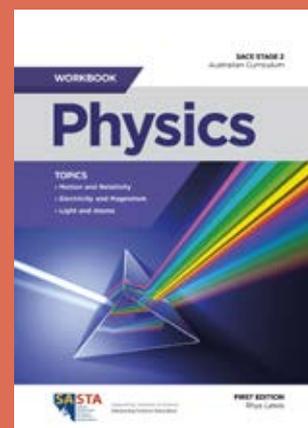
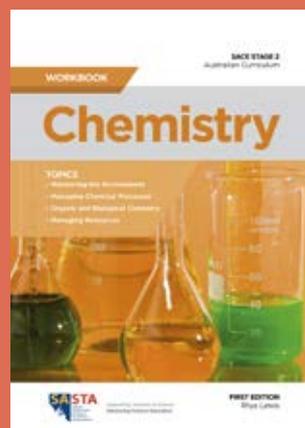
Student workbooks



SACE Stage 1



SACE Stage 2



Available from sasta.asn.au