UniSA Connect

Enriching education opportunities for secondary schools
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As educators it is our role to satisfy curiosity and we’re delighted to be able to help satisfy the curiosity of people involved in science, technology, engineering or mathematics, the STEM subjects.

The UniSA Connect program offers free workshops in some of the most exciting developments in the STEM subjects. These are interactive experiential programs for secondary school students, teachers or the community. The workshops offer inspiration and insight into how and why things work; they offer pathways into studying and even development opportunities to turn curiosity into a career.

For you or anyone else who has ever asked the question: “why?” the UniSA Connect program is a must. You’ll also have fun doing it.

**Professor David G. Lloyd**
Vice Chancellor and President

We’re delighted to offer you opportunities to engage with the UniSA Connect science, technology, engineering and mathematics (STEM) activities.

Our aim is to ensure that UniSA Connect offers programs which foster a community culture of innovation. We invite you to join us in this work to inspire secondary school students in STEM study. Promoting STEM careers to meet future workforce demands aligns the university with an international focus on this important direction and is another outcome we are working to achieve.

You can select one of our developed activities or work with UniSA Connect Officers to design and deliver a program to meet your community’s needs. Whichever option you choose we’re keen to establish a collaborative and productive partnership which engages secondary school students in rich experiential learning activities and teachers in tailored professional learning.

We look forward to working with you to offer exciting STEM learning.

**Stephen Dowdy**
Head of UniSA College
Unisa Connect

Unisa Connect focuses on inspiring science, technology, engineering and mathematics (STEM) study and career awareness with secondary school students. The suite of Unisa Connect experiential programs aims to promote further student STEM study and educational attainment.

Professional development opportunities for teachers particularly focuses on new technologies and engaging pedagogies.

Unisa Connect utilises academic expertise to identify current STEM ideas to develop interactive programs for secondary school students. Scenario based problem solving is used as a key approach in the programs, with authentic learning links for secondary school students. Most STEM programs are delivered at our Mawson Lakes campus utilising specialised equipment and facilities.

The Unisa Connect secondary school programs also connect with careers. The Career Awareness Program is designed to give senior secondary students the opportunity to explore career options and pathways.

Our student programs connect with:

- Biology
- Careers
- Chemistry
- Engineering
- Industry
- Mathematics
- Physics
- Science
- Technology

Bookings
For more information, or to make a booking, visit unisa.edu.au/Unisa-Connect
Student programs

The suite of UniSA Connect student programs are authentic learning opportunities structured into 2 hour workshops or full day programs.

3D Printers

For: Year 10 and 11 students
This program is an introduction to the use of 3D printers. Students will explore the uses and applications of 3D printing technology, observe 3D printers in action, have a hands-on experience with a CAD-based software package, and design a 3D object which will be printed for them to keep.

Aviation

For: Year 10 and 11 students
This full day program aims to engage and excite students about the possibility of careers in the aviation industry and make them aware of the pathways available. The program includes an interactive visit to the UniSA Aviation Academy at Parafield Airport. Students have the opportunity to explore aviation as a career and enjoy a number of hands-on experiences as they explore the skills, attitudes and disciplines essential for a future in aviation.

Career Awareness Program

For: Year 10 students
The Career Awareness Program is designed to enhance the Year 10 SACE Personal Learning Plan (PLP) subject by engaging with secondary school students to raise awareness and aspirations for higher education. Students complete a career match profile, and are able to identify future careers and study pathways with the assistance of third year psychology undergraduates from UniSA.

DSTO Radar Technology

For: Year 11 and 12 students
This program has been developed in collaboration with the Defence Science and Technology Organisation (DSTO) to demonstrate applications of radar technology. Students use an audio radar as a learning tool in an experimental workshop looking at the radar concepts of reflection and Doppler shift.

Key
Student programs link to:

| B | Biology |
| C | Careers |
| Ch | Chemistry |
| E | Engineering |
| I | Industry |
| M | Mathematics |
| P | Physics |
| S | Science |
| T | Technology |
Engineers Without Borders

For: Year 10 and 11 students
Engineers Without Borders focuses on developing community based, small scale, grassroots engineering programs with a focus on the needs of local people, the environment and sustainability. In this program, students undertake two interactive challenges based on the theme of access to clean water, a common issue faced by developing communities.

Geospatial Science

For: Year 10 and 11 students
This program explores a wide range of concepts in the field of geospatial science, from map making to environmental surveys and collecting GPS location data. It investigates how satellites work and how numerous satellites are needed to acquire accurate location data. Students gain this knowledge to use in experiential geocaching activities.

Maths Experience Program

For: Year 10 and 11 students
The Maths Experience program is an intensive one day program for high achieving maths students. Students participate in engaging mathematics experiential workshops. They also have the opportunity to develop relationships with like-minded students from other secondary schools, develop an understanding of mathematical applications, and find out more about mathematically based career options.

Note: This program is available for northern and western metropolitan schools only.

Momentum in Two Dimensions

For: Year 12 Physics students
This workshop links with the ‘Motion in Two Dimensions’ section of the SACE Stage 2 Physics curriculum. Students carry out an experimental procedure involving large air tables and plastic pucks to investigate the law of conservation of momentum.
Nuclear Physics

For: Year 12 Physics students
This workshop links with the ‘Atoms and Nuclei’ section of the SACE Stage 2 Physics curriculum. Students conduct three procedures that explore concepts of radiation and radioactive decay – calculating the half-life of an indium isotope, exploring the attenuation of gamma rays, and determining the penetrative range of beta particles through aluminium.

Penguin Pong

For: Year 10 and 11 students
Penguin Pong is an electronic activity kit. It provides an introduction to the world of electronics, giving students the opportunity to practice soldering and assembly techniques whilst developing their ability to identify and understand the function of electronic components. When assembled and soldered together, the kit becomes an interactive electronic board game. Two students can compete in a game of electronic ping pong.

Rural Reconnect

For: Year 10 students
Rural Reconnect is an orientation program for rural secondary students who are considering studying at university. Participating students will experience life at university first-hand, as they engage in a range of learning programs to raise their awareness of university careers. Students will be mentored by current rural university students during the three day program. Schools will be provided with an expression of interest form to nominate students to participate.

Science Booster

For: Year 12 students
The Year 12 Science Booster is a two day program designed to enhance the learning of students studying Year 12 Physics and Year 12 Chemistry. The specially tailored program includes laboratory sessions based on summative assessments, study methods, exam preparation and career insight sessions. All activities are tailored to review and support curriculum in Stage 2 SACE subjects.
Sensor Technology

For: Year 10, 11 and 12 students
The workshop incorporates information about the sensors used in our everyday lives and beyond, how our human senses function, and how our senses can be enhanced through sensor technology. The interactive program focuses on the operation of infrared and ultrasonic sensors. In this experiential workshop, myDAQ units, Vernier callipers, and LABVIEW software will be used to collect and analyse data from the sensors.

The Interference of Light

For: Year 12 Physics students
This workshop links with the 'Light and Matter' section of the SACE Stage 2 Physics curriculum. Students conduct a number of procedures that explore concepts involving the interference and diffraction of light, including double slit interferometry, calculating the wavelength of red and green lasers, and measuring the diameter of a human hair.

The Motion of Charged Particles in Electric and Magnetic Fields

For: Year 12 Physics students
This workshop links with the 'Electricity and Magnetism' section of the SACE Stage 2 Physics curriculum. An important focus of the session is the production and interpretation of graphs from experimental data, an important skill in the Year 12 Physics curriculum. The two experimental procedures conducted demonstrate the effect of electric and magnetic fields on electrons. These involve the use of Teltron Tubes and Hall Effect apparatus.

Programs under development will focus on the areas of:
- Health Sciences
- Materials Science
- Mathematics
- Mechatronics
- Solar Energy
- Sports Science
- Water Management
Teacher professional learning

UniSA Connect offers a range of teacher professional learning opportunities for secondary school teachers. Workshops focus on new technologies such as using 3D printers, sensor technology, using data acquisition software and electronics. The career awareness teacher professional learning program provides career match profile training which can be utilised in the Year 10 Personal Learning Plan subject.

In collaboration with the School of Education, workshop series on ‘Inquiry Based Learning’ and ‘Science as a Human Endeavour’ are offered.

Each of these programs is offered free of charge and will be held at the University of South Australia’s Mawson Lakes campus. On completion, teachers are provided with certificates using the Teacher Professional Learning standards.

**3D Printing: An Introduction**

This is an interactive workshop designed to introduce teachers to 3D printing. During the workshop, participants have the opportunity to design and print a personalised key tag and be provided with background information and future applications in advanced manufacturing.

**3D Printing: Improving your Printing**

This 3D Printing workshop is offered for teachers who have some experience with 3D printers, or who have completed the introductory course. The workshop explores topics such as how to increase the speed of prints, software enhancements and new materials that are available for printing. There will be opportunities to ask specific questions relating to your school’s needs.
Advanced Pedagogy in Science and Mathematics Teaching

The Advanced Pedagogy series is a sequence of 3 workshops exploring three different aspects of teaching and learning. The series will be delivered by Mr Bruce White (Program Director) and Dr Graham Hardy (Professional Experience Coordinator) from the School of Education.

Participants are invited to register and attend one or more of the sessions.

1. Tackling Unstructured Problems

In the classroom, most tasks are highly structured, and students are told which techniques to deploy. By contrast, in real-world problems, people often need to make simplifications, construct models, choose an approach, and evaluate outcomes by their own criteria. This theme compares structured and unstructured versions of problems and considers the demands and challenges unstructured problems present to students and teachers.

2. Students Working Collaboratively

If students are to make sense of STEM concepts, then they need opportunities to share, discuss and work together. However, just having the students work and talk together may not be enough to evoke student interactions that will be beneficial to learning.

This theme is designed to offer professional development and provide some resources that will help teachers to:

- consider the characteristics of student-student discussion that benefit learning;
- recognise and face their own worries about introducing collaborative discussion;
- explore techniques for promoting effective student-student discussion;
- consider their own role in managing student-student discussion;
- plan discussion based lessons.

3. Self and Peer Assessment

"... self assessment by students ... is in fact an essential component of formative assessment. Where anyone is trying to learn, feedback about their efforts has three elements — the desired goal, the evidence about their present position, and some understanding of a way to close the gap between the two." This theme encourages discussion of the following issues: How can we help students to become more aware of Inquiry Based Learning (IBL) processes, and their importance in problem solving? How can we encourage students to take more responsibility for their own learning of IBL processes? How can students be encouraged to assess and improve each other’s work?

Career Awareness

The Career Awareness teacher professional learning program provides career match profile training which can be utilised in the Year 10 Personal Learning Plan subject.

The career match profile is a psychometric profile used to identify potential education and career paths that suit each student. These profiles take into account each student’s interests and values. This innovative approach allows the secondary students to broaden their career horizons through career investigation. It also promotes awareness of university study options, including pathways for secondary students who have the capacity to succeed in higher education.

Training sessions are facilitated at school sites to relevant staff (including Personal Learning Plan teachers) who are interested in being able to facilitate career match profile sessions for their students. The sessions are conducted for one hour and, as part of this, individuals will complete a personalised
career match profile and analyse it. The career match profiles can be supplied by the University for use in secondary schools. Times and dates for these sessions are negotiated individually with schools.

**Science as a Human Endeavour**

The Science as a Human Endeavour (SHE) series will be delivered by Mr Bruce White (Program Director) and Dr Graham Hardy (Professional Experience Coordinator) from the School of Education. Teachers who enrol in this series will need to attend all 3 sessions, as they will plan and trial an Inquiry Based Learning episode in their own school.

Science as a Human Endeavour (SHE) is a new and important strand of the Australian Science curriculum. This series of three workshops will explore the nature, purpose and content of SHE and work towards developing a range of pedagogical approaches that can be utilised in teaching SHE in the Middle Years of schooling.

Some of the teaching themes will explore:

- the nature of scientific knowledge being contestable and tentative
- scientific knowledge being evidence based and focusing on explanations of human understanding
- how science works
- the development of knowledge through collaborative activity undertaken in a scientific community
- the reciprocal relationships between science and society
- developing critical citizens through understanding actions and informed decisions
- ethical issues and taking a caring and responsible attitude

**Sensor Technology**

This interactive Sensor Technology workshop is designed to explore a variety of sensors that can be used to develop engaging curriculum. Teachers will have an opportunity to collect different types of data using myDAQ and Vernier data loggers with LABVIEW software to analyse the data from the sensors. This software is used by engineering undergraduates.

Teachers can also select to preview the Sensor Technology and Radar programs that are offered as student workshops.
Regional Engagement

The University of South Australia is committed to regional engagement with campuses based at Whyalla and Mount Gambier. As part of this strategy, UniSA Connect provides student programs and teacher professional learning workshops in these areas.

Regional schools are able to negotiate programs in Science, Technology, Engineering, Mathematics (STEM) and Career Awareness. Interested schools can contact UniSA Connect to discuss possible offerings or enquire via the website unisa.edu.au/UniSA-Connect
Community Partners

Community engagement is a key focus of UniSA College and we proudly collaborate with a range of community partners.

Aboriginal Power Cup
The Aboriginal Power Cup contributes to an early intervention strategy that engages with Aboriginal Australian secondary students through sporting activities to provide inspiration towards, and information regarding, higher education and positive life choices. This partnership involves a range of community groups including the Government of South Australia, Port Adelaide Football Club, SANTOS and Transfield.

UniSA College provides assistance during the Aboriginal Power Cup Carnival, a steering committee member, and university resources by acting as a liaison between Port Adelaide Football Club, the School of Health Sciences, the School of Psychology and Indigenous Student Services.

Aboriginal Power Cup secondary student participation is linked to the study of a SACE unit, coordinated by The South Australian Aboriginal Sports Training Academy. The unit culminates with a carnival which incorporates the football competition, leadership skills, workshops and career information.

The Aboriginal Power Cup is a three-day event and involves approximately 350 secondary school students from schools across South Australia.
Australian Indigenous Mentoring Experience (AIME)
AIME provides a dynamic educational program that gives Aboriginal and Torres Strait Islander high school students the skills, opportunities, belief and confidence to finish school at the same rate as their peers. AIME has proven to dramatically improve the chances of Indigenous students finishing school. AIME also connects students with post Year 12 opportunities, including further education and employment.

South Australian Aboriginal Sports Training Academy (SAASTA)
The South Australian Aboriginal Sports Training Academy (SAASTA) is part of the Department for Education and Child Development and utilises sport to engage secondary students across senior years 10, 11 and 12. The primary focus of SAASTA is overall educational success with academy students required to complete an academic program, as part of their enrolment within SAASTA. Through their participation, academy students are supported and encouraged to increase and maintain their attendance, participation and educational achievement.

UniSA College in partnership with SAASTA is strengthening curriculum engagement and providing new approaches to learning, including STEM subject options. Students are provided with educational and experiential learning opportunities to raise awareness of career and university pathways.

The Smith Family
The Smith Family is a children’s charity helping disadvantaged Australian children to get the most out of their education, so they can create better futures for themselves.

UniSA College provides University Experience days for disadvantaged secondary school students. These programs allow students to participate in career awareness and experiential STEM programs at a University campus.
UniSA College

UniSA College was established in 2011 to assist students to prepare for university, combining secondary school outreach and academic activities.

Directing the work of UniSA College is the University’s strategic action plan ‘Crossing the Horizon’. This sets the focus for UniSA College in providing enhanced educational offerings and an outstanding student experience. The engagement with society extends beyond the classroom and campus, and provides a powerful student-focused service culture, supporting and enabling greater success.

UniSA College has developed into two key areas of focus — academic programs and UniSA Connect.

**Academic Programs**

UniSA College offers a range of academic programs which provide opportunities for people to access university education. Our two-year Diplomas provide guaranteed entry into a range of degrees at UniSA, and our Foundation Studies program provides a pathway for people without any qualifications. Our programs are designed to build key skills and knowledge to prepare students for further university study.

UniSA College has also developed music programs in association with the James Morrison Academy of Music in Mount Gambier, for students with expertise in jazz. These programs include a Diploma in Music, Associate Degree in Music, and from 2016 a Bachelor of Music.

**UniSA Connect**

UniSA Connect programs provide STEM and Career Awareness opportunities to assist secondary school students to develop key skills in these areas. A range of programs are available for students and teachers as outlined in this brochure.
Contact us

For academic program enquiries:
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Website unisa.edu.au/college

For UniSA Connect enquiries:
Contact Deb Turley, Manager – UniSA Connect Programs
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For detailed UniSA Connect program information, or to make a booking, visit unisa.edu.au/UniSA-Connect

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The University of South Australia reserves the right to alter, amend or delete any program, fee, course, admission requirement, mode of delivery or other arrangement without prior notice.

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