The University of Sydney Coding Network

Programming is a tool that can be mastered in many different ways.

In understanding that, The University of Sydney provides seven unique programs designed to teach high school students how to code. They cover concepts from algorithms, robotics, game design and computer security. Many are free, or offered at a discounted price, and give students the opportunity to explore new concepts.

Completing some of these programs may make you eligible for the Propel Initiative, which gives you the chance to obtain a study abroad scholarship. More information can be found at the Propel website.

Grok

"Learning to code has never been so accessible"

Grok Learning provides online courses to teach students how to code in Python 3. Courses range from beginner to advanced levels and prepare students to compete in challenges run throughout the year.

Sign up: https://groklearning.com/
Website: https://groklearning.com/
Open to: Years 5-12 School Students
Level: Beginner/Intermediate
Price: $30 (per student, per year)
Time: All year, competition times may vary

Australian Computing Academy

“An array of free coding courses and workshops which fit into the Australian Curriculum”*

The *Australian DT Challenges* are free in-classroom activities designed to address the most technically challenging aspects of the Year 5-6 and 7-8 bands of Australian Curriculum: Digital Technologies.
Each Challenge provides online and unplugged learning resources; engaging, authentic, real-world problems; modular lesson plans; and online training and support for teachers.
Years 5 and 7 students have free access to a learning platform that enables self-paced learning with immediate, intelligent feedback.
Other students have access via Grok Learning

Sign up: https://tinyurl.com/y8f459ex
Website: https://aca.edu.au/
Open to: All students, year 5 and 7 free
Level: Beginner
Price: *Free for years 5 and 7 students only, otherwise available through Grok
Time: All year

NCSS Challenge

"Fascinating weekly challenges to build students' skills"

The NCSS runs online classes for 4 levels of coding taking students from beginner to advanced levels of code. The problems are intellectually stimulating and grapple with real world computer science problems, involving run time and code minimization strategies. After signing up there are a variety of challenges available on the website outside the August challenge.

Sign up: challenge.ncss.edu.au
Website: challenge.ncss.edu.au
Open to: Years 5 - 12 school students
Level: Beginner
Price: $20 (per student, per year)
Time: August

NCSS Summer School

"A 10 day summer school for students entering years 11 and 12 to advance their coding skills"

Sign up: http://ncss.edu.au/summer-school/applications
Website: http://ncss.edu.au/summer-school
Open to: Year 11 and 12 Students
Level: Advanced
Price: $440 per student
Time: January

Girls Programming Network

"Develop your programming skills and challenge yourself with a group of like-minded girls"

The Girls Programming network is a group of women and girls into computers who run Saturday workshops every school term. The activities range from writing games, creating interactive websites and taking apart computers! It is designed to complement the HSC Software Design syllabus and students are encouraged to be a part of the NCSS summer school and challenge.

Website:
https://sites.google.com/site/girlsprogrammingnetwork/
Open to: School aged girls, year 3-5 and above
Level: Beginner
Price: Free
Time: Saturday during each school term at the University of Sydney

MadMaker

“Students write code using an Arduino Esplora to teach them scientific concepts”

MadMaker teaches students scientific concepts through coding, and is run annually from September to November. A class of students signs up and is provided with an Arduino Esplora, a comprehensive website allowing them to progress through lessons at their own pace, and the online support of university staff/students.

Sign Up: https://challenge.madmaker.com.au/register
Website: https://challenge.madmaker.com.au/
Open to: Years 9 - 10 school students (some younger)
Level: Beginner/Intermediate
Price: Free to participate, ~$80 per esplora board.
Time: October - November

Zero Robotics Australia

"Teams of students work to control robots aboard the International Space Station"

Zero Robotics is a coding competition run annually from September from January. Schools create a team of 5-20 interested students who must write the code to make these robots (called SPHERES) to play a game. They may be assisted by a mentor (on case by case basis), and the University of Sydney will provide online support.

In 2017, 5 Australian teams competed on the space station. Jame Ruse Agricultural High School won the virtual competition.

Sign Up: zero-robotics.admin@sydney.edu.au
Website: http://sydney.edu.au/engineering/high-school/zero-robotics.shtml
Open to: Years 9 - 12 school teams in the Sydney area
Level: Intermediate/Advanced
Price: Free!
Season: May - July, September - January

FRC - The Drop Bears

"Teams of students have 6 weeks to make a 50 kg robot play a game..."

The Drop Bears are a University of Sydney sponsored FIRST robotics team that meet weekly on Sundays throughout the year, and more frequently during the 6 week "build season". Each member of the team learns how to build a robot, including creating a CAD design, wiring the electrical system, manufacturing and programming - however, they will usually specialise into their area of interest.

In 2017 the Drop Bears placed 10th in the Southern Cross and South Pacific Regionals, and won the Control award.

Sign Up: enquiries@thedropbears.org.au.
Website: http://www.thedropbears.org.au/
Open to: School students in the Sydney area
Level: Advanced
Price: $300 yearly membership fee
Season: All year. Build season is January/February

*Note: Beginner, Intermediate and Advanced indicates the steepness of the learning curve and is not meant to preclude novice students from joining or put off experienced students from getting involved.