

2020 UNSWorkshops

UNSW Future Students Office

CompClub (UNSW Computer Science and Engineering Society)

Introduction to Python (60-120 mins; 5-30 students) – A gentle introduction to programming in Python, one of the most popular and favoured languages for beginners. For experts already acquainted with Python there are additional challenges to test your abilities to the extreme!

Introduction to Web Development (90-180 mins; 5-30 students) – Students will uncover the true colours of a website behind its pages, pictures and links, as we guide you through all the nooks, crannies and secrets of web design.

Introduction to Microbits (60-120 mins; 5-30 students) – Students will learn how to program BBC Micro Bits and through a variety of exercises gain an understanding of the logical structure of code and how microcomputers interact with the physical world.

Introduction to Game Development (60-240 mins; 5-30 students) – This workshop allows students to unleash their full creative imaginations as we explore how to make our very own versions of games like “Snake” and “Space Invaders”.

Introduction to Security (60-120 mins; 5-30 students) – This workshop introduces students to a variety of different ciphers that are used in modern day programs to enhance security.

CREATE NSW Inc.

Arduino Workshop - Robotic Arm (120-150 mins; 15-35 students) – This workshop teaches students basic technical skills in Arduino electronics and programming as well as Computer Aided Design (CAD) modelling and digital fabrication.

Engineers Without Borders UNSW

Floating Houses (60mins; 5-100 students) – This is our most popular module teaching students about basic human needs and factors that may contribute to the use of non-traditional forms of shelter. Students will then use problem solving skills to design a floating house for people living on a Cambodian lake.

Prosthetic Leg (60 mins; 5-100 students) – This module investigates the difficulties faced by people in developing countries who require prosthetic limbs. Students will learn the basic structure of a knee and lower leg, and will use problem solving skills to build a prosthetic leg out of materials that may be found around the home.

Renewable Energy (60mins; 5-100 students) – This module focuses on rural Australia, giving an overview of the energy grid and transmission of electricity around the country. After looking at different forms of electricity generation students will design the blades of a wind turbine to try and maximise power generation.

Road to Better Health (60mins; 5-100 students) – This is our newest module designed to address maternal health in developing countries by looking at ways to increase access to healthcare facilities and supplies. Students will learn about energy conversion and use their knowledge to build a rubber band powered car.

Engineering World Health

Heart to Heart (60-90mins; 15-30 students) – Heart to Heart demonstrates the importance of understanding anatomy and human biology before tackling biomedical engineering problems.

Protect the Pump (60-90mins; 15-30 students) – This workshop gives students a taste of work as a Biomedical Engineering technician in a low resource environment. Students will compete to build the most effective suction pump with the lowest cost.

Bone to be Wild (60-90mins; 15-30 students) – Students will compete to develop low-cost solutions to complex engineering problems. Students will attempt to develop the most cost-effective method of casting a broken bone.

RoboGals

Sumo (60-120 mins; 10-35 students) – Our most popular workshop where students construct robots, customise them to their preferences and program them to push each other, in a battle, out of a ring. This is a competitive workshop where each group battles for supremacy in the sumo ring.

Keep the Distance (60-120 mins; 10-35 students) – "Keep the Distance" is a new workshop that has been created as a result of the collaboration with Robogals UNSW and Transport for NSW. The aim of this workshop is to program the robot to pickup and drop off passengers of at their stops on time. This workshop is about buses maintaining headway in real life.

My Bus to School (60-120 mins; 10-35 students) – "My Bus to School" is a new workshop that has been created as a result of the collaboration with Robogals UNSW and Transport for NSW. This workshop aims to program the robot to move and stop at certain coloured markers whilst being manually controlled by the student. This workshop is about how buses are located buses in real life.

Setting Maximum Speed (60-120 mins; 10-35 students) – "Setting Maximum Speed" is a new workshop that has been created as a result of the collaboration with Robogals UNSW and Transport for NSW. The aim of this workshop is to program a robot, that will behave as a train, to change its speed depending on certain colours it detects. This workshop is about how trains adjust their speed when arriving or leaving a station in real life.

My Robot Rescue (60-120 mins; 10-35 students) – "Robot Rescue", also known as "follow-the-line", is a workshop where students will construct and program a robot to effectively follow a black line around a course.

Claw Machine (60-120 mins; 10-35 students) – Inspired by a claw machine, this workshop teaches students to build their own robot claw and code it to open and close. Through this students get the opportunity to learn some basic mechanics and programming. They then get the chance to compete against each other to see which robot claw can pick up the most plastic balls in 3 mins.

Sound of Colour (60-120 mins; 10-35 students) – This workshop introduces the basics of logic in automation. In the workshop, the robot reads colour codes and produce a melody with colour sensor and simple coding. Thus, introducing the concept of inputs processing and generation of responsive output.

Curling (60-120 mins; 10-35 students) – This workshop is inspired by the sport, curling, in which a smooth stone is slid across ice towards a marked area on the ground. The stone is normally pushed by a "broom", but in this case the robot is the broom. The robot's movement is controlled by students using touch sensors and the goal is to push a set of balls into marked area on the ground without the robot crossing a trespass line that is drawn around the marked area. After achieving this, students must move the robot to a coloured spot of the ground which acts as a finish line.

UNSW Built Environment

Introduction to the Built Environment (90-240 mins; 15-30 students) – In this workshop students will be introduced to the built environment by participating in various activities which come together to build a city. Students will work in groups to explore a discipline/s within the built environment: city planning and landscape architecture; architecture and construction; and interior architecture and industrial design. At the end of the activities students will bring their ideas together and finalise their plans for their city, gaining an understanding of the interdisciplinarity between these disciplines and how they collaboratively shape future cities.

City Planning and Landscape Architecture (60-90 mins; 15-30 students) – Students will gain an understanding of land-use planning and 'zoning' by creating a master plan for a new town centre. They will strategically place

prescribed facilities/services on maps and then create a master plan for a landscape project within a new town centre.

Architecture and Construction (60-90 mins; 15-30 students) – Students will gain insights into building structure design and utilising construction management methods. In the workshop they will use the design process to design a building structure for a shopping mall, then will trial varying construction materials to create a sustainable and durable building for future generations

Interior Architecture and Industrial Design (60-90 mins; 15-30 students) – Students will learn about interior design by designing an interior fit out within a shopping centre that responds directly to the needs of the community. Students will then apply the industrial design process to design an innovative piece of public furniture that influences the user's behaviour within the context of a shopping mall precinct in order to meet a need of that segment.

UNSW Engineering

Heart Pump Workshop (60mins; 15-30 students) – Providing an insight into the world of biomedical engineering, students will learn how a heart pump can be designed and created in order to improve quality of life and longevity for those who suffer from heart failure.