ELECTRICAL ENGINEERING SUMMER SCHOOL
Department of Electrical and Computer Engineering
22 - 25 January 2013
engineering.curtin.edu.au
ABOUT EESS 2013

Engineering is not just about building bridges and buildings. If you are curious about climate change and renewable energy or you have an interest in telecommunication gadgets, circuits or computers and robotics, Curtin’s Electrical Engineering Summer School can give you some answers.

APPLICATION PROCESS
The EESS is open to students entering years 11 and 12 in 2013. If you are interested in this opportunity you will be required to submit:
1) a completed application form,
2) your most recent school results and
3) a personal statement to tell us a bit about yourself, your achievements and goals, and what interests you about a career in engineering.

Application forms are also available online at www.engineering.curtin.edu.au/outreach
Please scan and email your completed application to engineeringoutreach@curtin.edu.au or send by mail to:

EESS Program Manager
Engineering Outreach
Building 204, Curtin University
GPO Box U1987
Perth WA 6845

Applications close on Monday 12th November, 2012.

COST
The program is funded entirely by Curtin University Engineering Outreach so there is no cost to participants. Students attending from outside the Perth metropolitan area will be eligible for a $300 bursary to assist with travel and accommodation.

Higher travel and accommodation assistance will be given to students attending from regional areas of WA such as the Pilbara, Kimberley, Gascoyne, Mid-West and Southern Goldfields regions.

A few places are available for science teachers and/or career advisors to participate on a first come, first served basis.

Please contact the Program Manager, Tim Keely for more information on 9266 7884.

CAREER OPPORTUNITIES
One third of all engineers will retire in the next 10 years. There is a global shortage. Electrical, Electronic, Communication and Computer engineers make up more than 80% of all engineers across the world in a wide range of areas including:
- Mining and Resources
- Aviation
- Energy
- Radio Astronomy
- Medicine
- Telecommunications
- Manufacturing
- Entertainment
- and many more.

This 4 day summer program, organised by Curtin’s Department of Electrical and Computer Engineering (ECE), aims to provide students entering years 11 and 12 in 2013 with an opportunity to discover the benefits and scope of a career in engineering with a combination of hands-on engineering lab activities, site visits and guest speakers.

The program will take place at Curtin University’s Bentley Campus in Western Australia.

PROGRAM OUTLINE
While you are learning about electrical and computer engineering and Curtin, you will also be given the opportunity to take part in a number of hands-on engineering project sessions. These will cover:

**Engineering in Radio Astronomy**
Get introduced into the advance field of Cosmology and Radio Astronomy and meet up with key Scientist and Engineers who are involved in designing the world’s most advanced scientific instrument to understand how our Universe came about. Students will be introduced to the various key electronics and communication instruments that are used for this special field of science and engineering. Students will have an opportunity to do some radio astronomy and solar observation activities. They will also be introduced to the most advance Square Kilometer Array project that is taking place in Western Australia.

**Power and Renewable Energy**
Students will be given a brief lecture on Renewable Energy Resources. They will be introduced to the latest renewable energy technologies such as Hydrogen Fuel Cell Technology and Hybrid Renewable Energy Systems. They will see how hydrogen is generated through electrolysis and how the hydrogen is used to generate electricity using fuel cells.

The students will use industrial solar panels to generate electricity and understand some of the key considerations that engineers are faced when developing renewable power generation systems in the real world. Students will have a chance to visit our state of the art Green electrical power generation systems in the real world. Students will have the opportunity to discover and learn about the devices that they have constructed.

**Career Opportunities**
Students will be learning about electronic component recognition and basic electronics. They will be soldering electronic components on printed circuit boards and testing the devices that they have constructed. By the end of this activity the students will be able to identify some of the key electronic components and solder components for electronic circuit assembly. This activity opens up the students mind to the field of electronics and communication and will allow them to expand further to more complex circuits that they can purchase form electronic companies such as Jaycar.

**A Taste of Programming**
This is a brief introduction to programming, teaching the popular Java programming language with the aid of the Judo programming environment.

Students will program and build a simple game using the popular Java programming language with the aid of the Judo programming environment. Students will program and build a simple game using the popular Java programming language with the aid of the Judo programming environment.

This activity introduces students to the basics of programming and the Java language and will familiarise students with the basics of programming.

**Introduction to Electrical and Computer Engineering**
Students will work their way up to animating a stick figure, and finally the ultimate challenge: build a fully-working game of Pong (tennis from a top-down view; the first “coin-op” arcade game ever created). Both Java and Judo can be downloaded for free from the Internet, so the student will be able to continue working on the program (or any other program they want to write) at home. The student will also be brought through live demos to give them a peek into their future as a student Computer Engineer - generating photorealistic 3D scenes, re-inventing Google Maps, a camera that tracks you around the room, rotoscoping Lightsabers in real-time while you ‘battle’ against each other, and more. By the end of the activity the student will be able to write their own program for applications they might be interested in.

**Seminars and Workshops**
- Introduction to Electronic Components: students will purchase form electronic companies such as Jaycar.
- They will be taught to the field of electronics and communication and will allow them to expand further to more complex circuits that they can purchase form electronic companies such as Jaycar.
- Soldering: students will be taught to solder electronic components for electronic circuit assembly. This activity opens up the students mind to the field of electronics and communication and will allow them to expand further to more complex circuits that they can purchase form electronic companies such as Jaycar.
- Electronics: students will be learning about electronic component recognition and basic electronics. They will be soldering electronic components on printed circuit boards and testing the devices that they have constructed. By the end of this activity the students will be able to identify some of the key electronic components and solder components for electronic circuit assembly. This activity opens up the students mind to the field of electronics and communication and will allow them to expand further to more complex circuits that they can purchase form electronic companies such as Jaycar.

Additional information about the program will be sent to successful applicants.
WHAT PARTICIPANTS HAVE SAID ABOUT THE EESS

“Overall it has been a great experience. I enjoyed the hands-on activities more than anything else”

“I thoroughly enjoyed myself, met new people and would have liked it to go on longer. Thank you for a great experience, it will surely influence me in my future decision making”

“Make it a year-long club as well as a summer school!!!”

“It was an awesome experience. I learned a lot of new things, realised what engineering actually is and also made a lot of new friends.”

“Greatly enjoyed meeting and speaking with the staff at Horizon Power during lunch, greatly enjoyed the program.”

“The staff were really generous and here to help. I was really happy with it - so glad I came.”