ROBO ROOS NEWSLETTER

www.roboroos.org.au

DECEMBER 2016

BUILD SEASON APPROACHES!!!

As there are a number of new students and families who may not have been able to attend the new parent info session in October, a brief run down of the build season follows:

Kick Off: Jan 7th. This is when the competition details and rules are released to all teams worldwide. This is in the early hours of the Sunday morning as it is US based. The RoboRoos will then meet on the Sunday to discuss the release and start thinking about the requirements of the robot to meet the challenges. There is then a 6 week period in which the robot must be designed, produced and programmed. It is then "bagged and tagged" and sent to Sydney for competition in March.

During this 6 week period work will take place on the weekends (Saturday and Sundays) at the shed and maybe some evenings. Tentatively from the 14th Jan and times would be 9-10am to 6-8pm depending on mentor availability.

The first week (design phase) is usually at UniSA and may involve every day of that week. The times for the build sessions will be discussed on the Sunday the 8th in more detail..

It is vital that all students and parents check their roboroos emails as changes to schedules may occur .

If you do not have a roboroos email please contact Bryce to organise one.

Subteams: Design, CAD, Electrical, Mechanical, Media and Software.

Students will be asked to choose one subteam as their main focus and one second option. Need to consider availability e.g design has a heavy focus in week one.

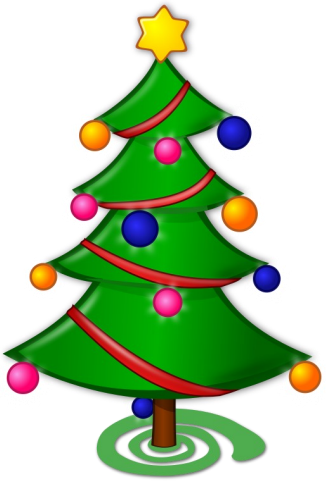
Students should also make sure they are familiar with the game rules.

Competition dates: Sydney March 12-15th 2017 at Sydney Olympic *Park.*

Captain's Corner

Belinda accepting congratulations on behalf of the Robo Roos from the Unley Mayor Lachlan Clyne as a grant recipient.

New students and parents, Belinda is the student captain of the RoboRoos. Please feel free to approach her to ask any questions about RoboRoos and the build season .



CLUB DATES / UPCOMING EVENTS

Sun Dec 18th
Building Robots 2-5pm
Workshop—cancelled

Tues Dec 20th
Dr Steven Grainger
Mechanical Concepts and Adelaide Uni Tour
10am to 2.15pm

Tues Dec 20th
Club Xmas Party
5.30—8pm

Sun Dec 25th
MERRY CHRISTMAS

Sat 7th / Sun 8th—overnight Kickoff—release of competition details.

Sun Jan 8th
Kick off Session 11am to 5 pm Uni SA City West Campus

INSIDE THIS ISSUE:

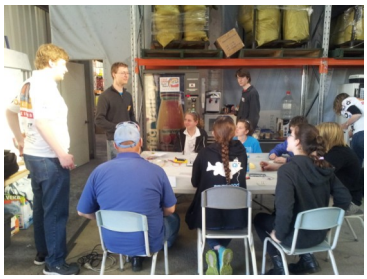
Club Day 11th September

Thankyou very much to John Withall from Adelaide Pneumatics for supporting our club and enthusing the students in the uses of pneu-

ADELAIDE PNEUMATIC SALES

The Sunday Club day was well attended by new and old club members. It was also great to see Caroline and Liam from BAE .

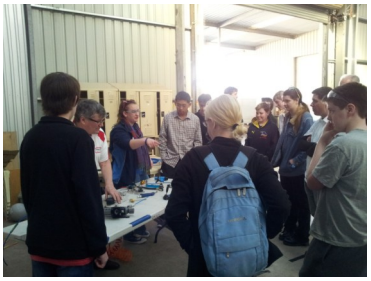
The aim of the day was to introduce / update students in some of the basics that are required for the build season to better prepare them for the build frenzy. There were five stations which the students could rotate through.



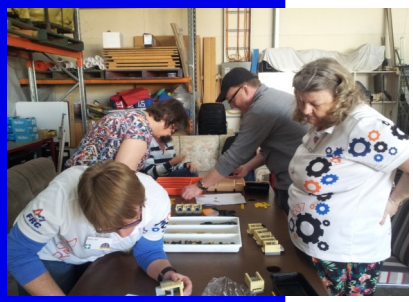
Hand tools was run by **Geoff Rabone** and focussed on accurate measurement and precision cutting techniques with hand tools.

Power tools station was run by **Jeff Jenkins** and involved sharpening of drill bits.

There were two stations for : **Electronics** with **Geoff M** running a session in basic circuits and **Jack M and James F** running a session on more complex circuits.



Pneumatics was a popular session with a lot of interest shown by the students and a very sincere thankyou to John Withall from Adelaide Pneumatics for putting on a terrific demonstration of the different applications of pneumatics – ably assisted by Ali McD.



The parents were also put to work in the background with Wendy, Pam, Damian and Sharon busily putting together the FLL lego kits.

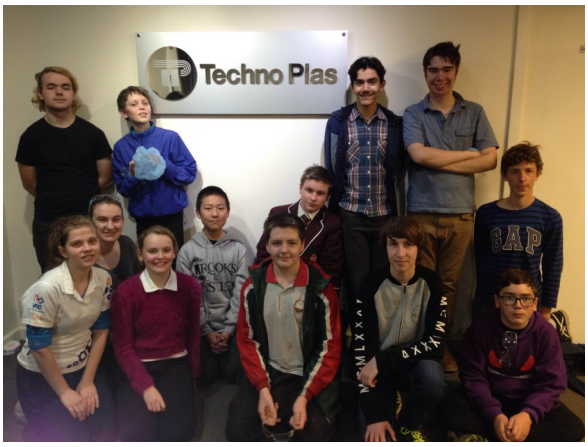
It is great for students to have the opportunity to learn new skills and to improve other skills with the help of the dedicated mentors that were involved in this club day. Thankyou again to John for giving up his Sunday to enthuse our students about pneumatics.

Also as always a big thankyou to club mentors "The Geoffs (Jeffs) "- Geoff M, Geoff R and Jeff J for their time and commitment to the day and to Alumni Jack M with helper James F for their input.

TRACY

Technoplas visit 20th Sept

On Tuesday the 20th of September, I along with some other members of the team went to Technolplas,



It was so cool, we were always looking behind us to check if the robots that move boxes were coming near, meaning we would have to get out of the way.

The factory was amazing, We saw all the different robots and machines making the Petri dishes, lids, and all the other amazing things.

The best thing of all was seeing the components of the machines that were similar to concepts and designs that we used on our robots and the concepts that would have made our robots even better if we had used them.

Overall it was a fantastic experience and if there's another Technoplas visit in the future I will go again to see how much the factory has changed and grown and what other ideas we could use on our robots.

Kara Jenkins

Thankyou to Technoplas for allowing us to visit and for being so supportive of the RoboRoos.

Ingenuity 2016

THE UNIVERSITY of ADELAIDE

Celebrating tomorrow's technology leaders.

Ingenuity is an exhibition held by the Adelaide University to showcase the work of graduating students from the Faculty of Engineering, Computer and Mathematical Sciences (ECMS). It was a fascinating and impressive display of the university students projects and research.

It was held in the exhibition halls of the Adelaide Convention Centre and this year there was over 4800 attendees including industry representatives, primary and high school students and interested parties from across the University community.

The RoboRoos were invited to be involved with a display.

Marvin Mk2 (ball thrower) and Kermit the crate stacker were front and centre with the usual dramas on the day.

While there were a few technical issues there was an opportunity for visitors to drive a robot and gain their drivers licence—thankyou to Charlie R-K and Ryan F and Victoria (alumni) for their efforts on the day.

The display was very positively received with attendees surprised at the complexities of the robots and the fact that they had been built in such a short time frame and by high school students.

Thankyou to the adults who participated - especially Peter R-K, Jeff Rabone, Adam J , Jack M, Jim R, (and me for the quick trip to Bunnings), and Geoff M for the unloading and loading.

Thankyou to Louise O'Reilly for facilitating our involvement.

Tracy

Club Day 9th October

A special welcome to the engineers from Applidyne

Thanks for all those that attended it was a busy and productive day. And a special welcome to the engineers from Applidyne that came for the first time.

Hopefully the team games allowed everyone to start to get to know your team mates better.

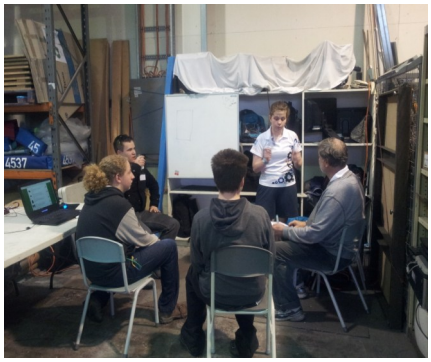
Fiona ran an information session on the club and plans for build season and how you can get involved (parents and students). Information about competition etc. An email was sent to all on the 10th of October for those who missed out. If you have questions just ask.

Piotr (our lead mentor) provided the students with a brief for a practice robot build that we will be doing over the following weeks, Sundays 2-5pm. (see below)

The students split up into groups and started work, just like we will do at kick-off in January. His brief is attached if you weren't there. Read his separate email he has sent with loads of information and lots of good links/blogs to follow. Make the most of your school holiday time and get reading.

Geoff ran an electrical session. They showed a block diagram explanation of the robot electricals and the types of signals we use.

Dave reminded us about safety at the workshop e.g. wearing closed shoes and having safety glasses. Fiona M



ROBOT BUILD BRIEF:

Frame: External less than 100 inches
Weight: 100lbs
Cost $4000
Other FRC rules as per 2016
Tasks:
- Pick up duct tape rolls loose on the floor in 6ft x 6ft storage area
- Deliver rolls into a white bucket away from the storage
- Drive onto a platform using 23° ramp, 40 inches(“) long and 30” wide, platform60” long, 40” wide, same ramp on the other side.
- Place duct tape rolls on the pegs above the platform (3 pegs each 1” diameter with reflective tape)

Points:
Autonomous (40 seconds):
- Rolls in the bucket: 5 points
- Drive onto platform: 10 points
- Rolls on pegs: 1st 10 points, 2nd 20 points, 3rd 40 points

Driven:
- Rolls in the bucket: 2 points
- Drive onto platform: 5 points
- Rolls on pegs: 1st 5 points, 2nd 10 points, 3rd 20 points

Outreach : Robo Roos go to KI

The RoboRoos were invited to introduce the students at Kangaroo Island to robotics. Ali McDonald, Scott Stevens and I -spent three days "overseas" for the program. Day 1: early start, ferry ride to Penneshaw and spent the day at the Area School, introducing the primary students to Lego robotics and programming. Day 2: -Ali and Scott travelled with the Lego kits to Parndana for the second primary school session, while I remained in Kingscote to build FRC robots with the high school students.

The students were taken through FRC, basic robot chassis designs, the various parts of a robot, and introduced to the parts of the control system. With the theory behind them they spent the day wiring and programming the robots. This involved everything from cutting out the plywood bases, designing the electrical system, attaching and wiring up the components, stripping and crimping wires, and writing the Java code. At the end of the day the Duel Down Under chassis was back in full working order, and the students had fun driving at high speed on the school grounds.

In the afternoon Ali and Scott returned to Kingscote and ran another extremely successful session with the primary students, creating a robot dance competition that was both immensely fun and highly successful for all involved. The demand was such that they were asked to run yet another session after school, so that the students (and parents) who had missed the earlier classes could attend.

Day 3 A little bit of sightseeing and then back on the ferry—some enjoyed the trip back more than others.

Special thanks to **Kangaroo Island Community Education** for inviting us and being such great hosts, **RoboRoos** for their support, **CSIRO** for the loan of the Lego kits, and the University of South Australia for the vehicle, accommodation and second robot electrical system. And, most importantly, thanks to Ali and Scott for volunteering to go on short notice, and for doing such a wonderful job.

The students and teachers were very eager to do this next year, so hopefully we'll be back in 2017!

Adam Jenkins

University of South Australia

"I did not get lost when trying to return to Penneshaw !"

Adam

Outreach: Seymour College Robot Building Day

After Ingenuity, we were invited to visit the girls at Seymour College for a day of robotics. After the great time that we had on Kangaroo Island we decided to run a similar event, so Jeff Jenkins, Scott Stevens and I brought two FRC robots to build. Along with the mecanum base that we took to Kangaroo Island, we had a new Peanut chassis that was still little more than random bolts and lengths of metal. Over the course of the day a small team of year eight girls, working with the 'Roos, constructed the new chassis, built the gearboxes, designed and wired up two electrical systems, and managed to complete a fully operational robot. This must be some sort of FRC record. The Seymour girls were wonderful, very capable, and great to work with, and we all had a wonderful time..

We returned to the school with the completed Peanut chassis (now known as Seymour after the location of its birth) and spent an enjoyable hour watching the Seymour primary school students drive the robot around the music room - many of the students proving to be great drivers, so let's hope they're ready to join our drive team as soon as they're old enough.

Once again, **thanks for Jeff and Scott** for volunteering to spend the day with the students, **UniSA** for the second robot and control system, and especially Seymour College, the year eight girls, and their **teacher Sharon Eichinger** for making it such a wonderful day for all of us. **Adam Jenkins**

Adam has been very busy with other school visits : to Black Forrest Primary School's Creatix and Sunrise Christian School at Marion. Well done Adam!

Club Night Nov. 2016

MERRY CHRISTMAS

applidyne
Engineering Design Solutions

On the 29th of November, a dozen or so RoboRoos squeezed into Uni SA for a presentation on how the engineering firm Applidyne does the design and documentation for their projects, in the hope that we might be able to use a similar approach to bring some order to the chaos of our past designs!

We went quickly through how Applidyne uses an all paper "development documentation system" to record their design thoughts in a quick and orderly way.

We then designed a ping pong ball shooting robot to try it out.

Thanks to Marco Hess and the team for putting together an excellent and informative presentation for us all.

Jack M (alumni)

Marco also kindly gifted us pads, pencils, rubbers, rulers and a RoboRoos folder which are at the shed.

We are incredibly lucky to have such enthusiastic industry supporters.

Applidyne's skill set (taken from their presentation) is—product design and prototyping, project management, systems design, research and development, technical investigation of Accidents and failures, analysis and computer modelling of Dynamic Systems.

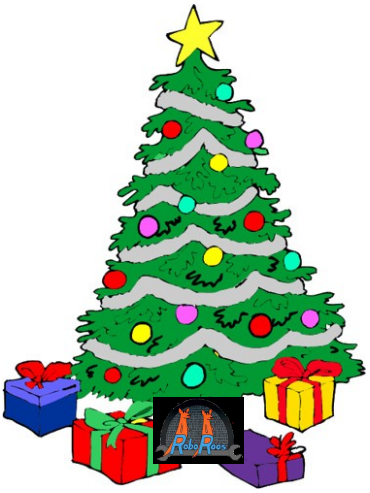
They have worked with a variety of industries including: medical, mining, consumer products, building, energy, special purpose machines, military and automotive.

A summary of their directions for us (taken directly from the presentation):

1. Use small steps.
2. Follow a process
3. Define the problem
4. Develop concepts—brainstorm, research, develop ideas, consider alternatives.
5. Choose the best idea—use pro vs cons, KISS principle.
6. Develop functional blocks e.g. drive base, remote controller, shooter mechanism, aiming mechanism., power supply.
7. Define interfaces—mechanical, electrical, software, control
8. Develop a prototype, test, improve.

THROUGHOUT: DOCUMENT

Thanks Matt for uploading the presentation.



FLL - First Lego League

BAE SYSTEMS

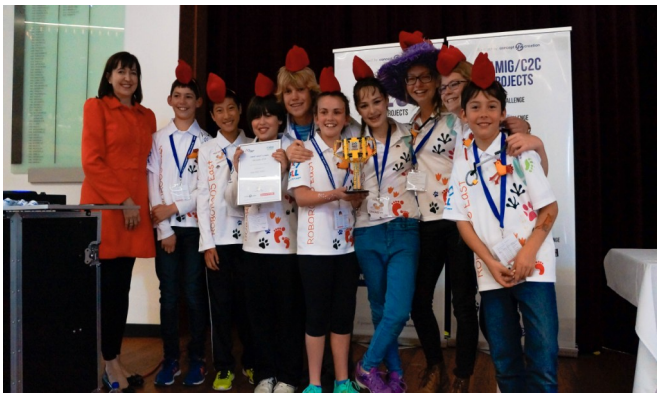
Woohoo! We're going to Sydney!

Our exciting journey started 5 months ago and was helped along by lashings of multicultural food, fun team games and food. We made our robot, the Beast From The East with constant support from our mentors and families, and food!

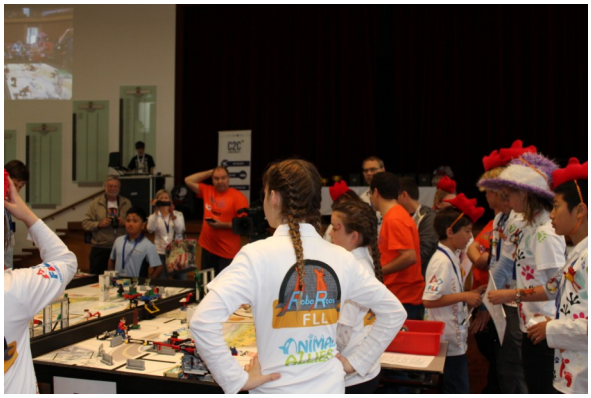
We also spent a lot of time on our research project, thanks to Dr Susan Hazel from Adelaide Uni for talking to us all about free range eggs and teaching us to clicker train chickens. We even did a taste test of lots of different eggs. Yummy!

Georgie Ryan-Kane .

Thankyou to all the RoboRoos members who helped set up and run the event. As always a terrific effort by all. Everywhere you looked there were RoboRoos members in their volunteer T-Shirts —Welldone.



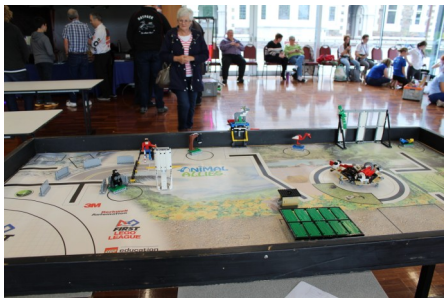
RoboRoos East Champions Award

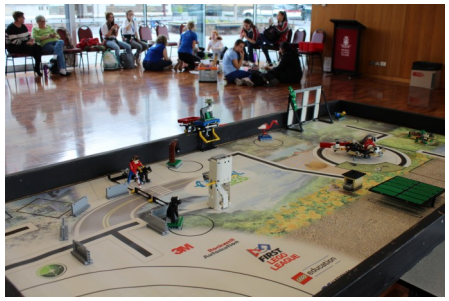


There were two RoboRoos teams involved with the FLL competition and a third team which was founded by RoboRoos members. They all did exceptionally well and the enthusiasm was wonderful to see.

We would like to thank **BAE** for their continued support for the FLL SA competition.

We look forward to hearing more of the competition in the next newsletter

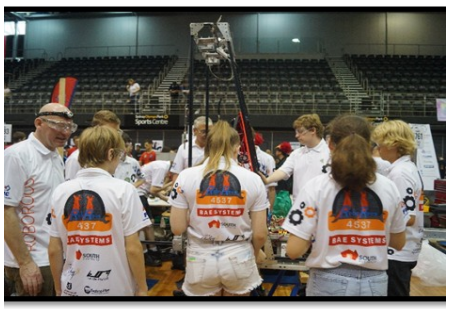




Thankyou to Adam and Matt for setting up and manning the RoboRoos display

ROBO ROOS IN 2016

Hopping into engineering!



Who are the RoboRoos?

We're a community group, FIRST® Robotics Team and so much more—including South Australia's first FRC team.

The team's purpose is to excite young minds about STEM (science, technology, engineering and mathematics), by using a common interest: Robots.

As part of this, students get real industry experience, with help and guidance from dedicated industry professionals as mentors. It circumvents the age-old circle of being unable to get a job due to lack of experience.

Part of our ethos is to maintain a gender balance, which we continue to strive for and achieve.

www.roboroos.org.au

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