

UNIVERSITY OF  
WOLLONGONG



AERONAUTICAL  
VELOCITY CHALLENGE



## Important Dates 2015

School Heats completed by 31st  
march

Semi finals completed by 22nd May

Finals at UOW 12th June



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## General Rules & conditions



1. PPE safety gear to be provided by individual schools. Eg goggles etc.
2. Teams max of 6 students

### Bottle Rocket Regulations.

1. The maximum number of launches fires per round will be three in total, regardless if the design only achieves a short distance.
2. For safety reasons, sharp edges or fins are not allowed. If a judge detects any these will have to be fixed immediately.
3. Only use materials provided.
4. Avoid using thin walled bottles; these may explode during the competition due to repeated pressurizations experienced during launches.
5. Only use 1.25/2 litre bottles.
6. No ring fin designs are allowed this year.
7. No bottle will be provided by the organizers so get organized and remember to bring some spares to repair your design between rounds.
8. Each school's design needs to be clearly identified with their school name.
9. If participating in the velocity challenge the following sizes for the nose cone to allow the accelerometer need to be followed.
10. The judges decision will be final.



### Power Anchor Regulations.

1. Teams will build 2 planes; a 'speed' plane and a 'altitude' plane
2. There is only one build time from the start of day until lunchtime (10.30 till 1 ish)
3. Only use the materials provided to build your plane. Remember you may need spares to repair if there is a crash!
4. Each plane has to be able to take off and land using their wheels, those that don't will be disqualified from the heat
5. Each plane will have a ribbon supplied affixed to the rear of the plane. The plane that touches the ribbon of their opponent first, will be the winner of that round.
6. There will be 3 rounds to decide the winner and the judges decision will be final.
7. Time to fly five laps and maximum flight height will be recorded, and height will be used to break a dead-locked dogfight.
8. There will be a dogfight to decide who the winner will be. (max 3 minutes)
9. Builders have access to 2 Power Anchors during this time to build and test. Builders need to record a speed and height reading with the judges, used to determine dogfights positions
10. After lunch: Judges call out teams to compete in winner takes all dogfights. Heats see a fast plane combat a high flying plane. Survival of the fittest! Two anchors in use: one judge per anchor. Winner is the last plane left
11. One and only build time from the start of day until lunchtime (10.30 till 1 ish)



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# AERONAUTICAL VELOCITY CHALLENGE

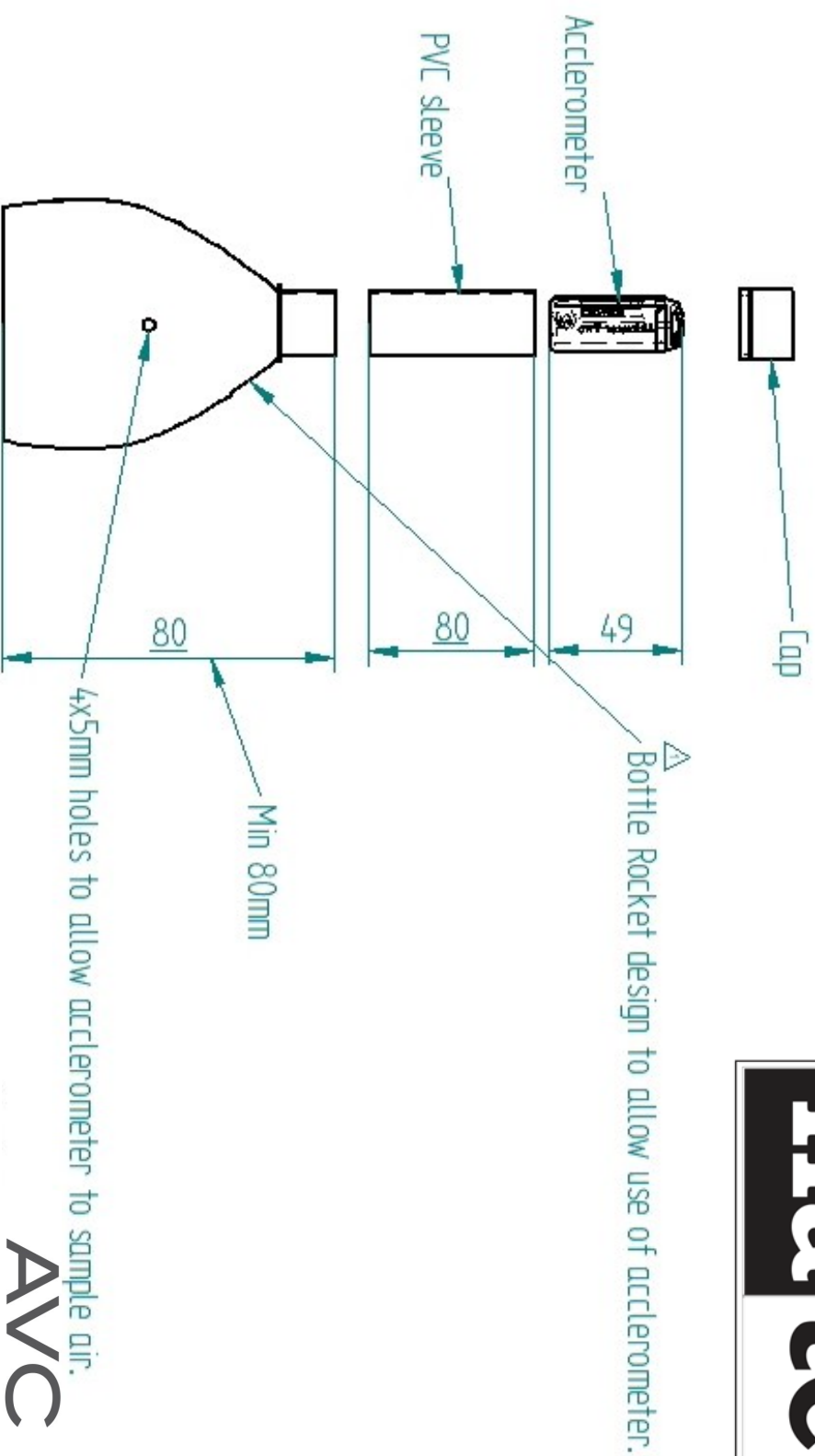
## BOTTLE ROCKET



Weight of Bottle Rocket empty (gms)	Number of fins	Overall Length	Nose Weight(gms)	School	Team Name
Angle (deg)	H2O (mls)	PSI 80	Distance Meters (m)		
45/50/55/60/65/70/					
Attempt 1					
Attempt 2					
Attempt 3					
Attempt 4					
Attempt 5					
Attempt 6					
Attempt 7					
Attempt 8					
Attempt 9					
Attempt 10					
Attempt 12					
Best Distance					
Worst Distance					



# AERONAUTICAL VELOCITY CHALLENGE



AERONAUTICAL  
VELOCITY CHALLENGE



*Institute of Industrial Arts Technology Education*  
Future Designers & Engineers

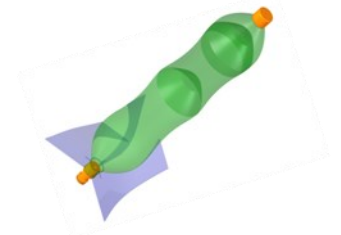
# Aeronautical Velocity Challenge 2015

~~It's NOT Rocket Science~~



## TEAM NOMINATION FORM

School: \_\_\_\_\_  
Teacher: \_\_\_\_\_



Please indicate whether your students will be participating in the bottle rocket or Poweranchor category or both by ticking the box opposite. Please email this nomination form to Mr Brian Barter: [bbarter@tcs.nsw.edu.au](mailto:bbarter@tcs.nsw.edu.au) by Friday 8th March 2015.

Thanks and welcome aboard.

**Leasing options:** 2 Power Anchors and 2 Bottle Rocket Launchers are available to lease for \$50 for the duration of the competition. These can be purchase if desired at the conclusion of the comp for half their retail cost. Email Brian Barter for the fine print.

Bottle Rocket

Rookie

Expert

Poweranchor

Rookie

Expert



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**GROUP OF EIGHT AUSTRALIA**  
ENGINEERING ASSOCIATE

UNIVERSITY OF  
WOLLONGONG



AERONAUTICAL  
VELOCITY CHALLENGE

*Institute of Industrial Arts Technology Education*

Future Designers & Engineers

# Aeronautical Velocity Challenge 2015

It's ~~NOT~~ Rocket Science

This is a STEMs initiative focusing on addressing Australia's shortage of scientists and engineers. Challenges include; dog-fighting balsa model propeller powered planes; bottle rockets' distance travelled, maximum. velocity attained, precision firing & overall aesthetics. Students compete in teams of four to design, produce, test & evaluate their prototypes. Teams are required to justify their design & engineering decisions verbally to the judging panel.

This competition is an ideal opportunity for schools, students, teachers, community and local industry to engage in practical numeracy and literacy activities in a fun and innovative engaging environment.

School Heats completed by 31st March

Semi finals completed by 22nd May

Friday the 12th of June 2015

**9.00am - 4.00pm**

@ The University of Wollongong,

Wollongong Campus

Smart Building/Oval No 1

Cost Ilate member \$20.00

Non-member \$30.00

For further information, please contact

Steve Delaney [steven.delaney1@det.nsw.edu.au](mailto:steven.delaney1@det.nsw.edu.au) or 0409 224 724

Dean Hannah [exciteandeducate@gmail.com](mailto:exciteandeducate@gmail.com) or 0421 919 263

Brian Barter [bbarter@tcs.nsw.edu.au](mailto:bbarter@tcs.nsw.edu.au) or 8863 2952

Bob Wheway [bobwhe@uow.edu.au](mailto:bobwhe@uow.edu.au) or 0497912574



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**GROUP  
OF EIGHT  
AUSTRALIA**  
ENGINEERING  
ASSOCIATE





insert school logo



Dear Parent or Caregiver,

Your child is invited to the

# Aeronautical Velocity Challenge State Heats/Final circle one.

School Heats completed by 31<sup>st</sup> March  
Semi Finals completed by 22<sup>nd</sup> May

*The Aeronautical Velocity Challenge is a STEMs initiative focussing on addressing Australia's shortage of scientists and engineers. Design teams will partake in challenges including; designing, producing and dog-fighting balsa model propeller powered planes, and designing, producing & launching bottle rockets to achieve a maximum velocity whilst travelling a maximum distance. Students compete in teams of up to six students to design, produce, test & evaluate their prototypes. Teams are required to justify their design & engineering decisions verbally to the judging panel.*

*This competition is an ideal opportunity for schools, students, teachers, community and local industry to engage in practical numeracy and literacy activities in a fun and innovative engaging environment in the pursuit of becoming STATE CHAMPIONS.*

on  
**Friday the 12<sup>th</sup> of June 2015**  
at the  
**University of Wollongong**  
from  
**9.00 am to 4.00pm**

This excursion has been planned to supplement work being done in  
**Stage 4 Technology Mandatory and Stage 5 Design & Technology & Engineering**

The teacher in charge of the activity is:  
The teachers attending this activity are:  
The teachers with Emergency Care training are:  
Teachers with Cardio Pulmonary Resuscitation training:

Students will need the following items on this excursion:

Clothing: **Full School Uniform**  
**Safe, sturdy, enclosed footwear**  
**STUDENTS MUST BRING THEIR OWN PPE**  
**(safety glasses, aprons, hair nets, etc.)**

Food: **BYO Morning Tea & drinks**  
Lunch provided  
Canteen facilities are also available

.....  
Excursion Coordinator –

.....  
Principal

Please complete details and return to .....

**UNIVERSITY OF  
WOLLONGONG**



# EXCURSION CONSENT & MEDICAL INFORMATION FORM



insert school logo



I consent for my child, ..... of class ..... to attend the  
(student's name) (student's class)

## Aeronautical Velocity Challenge State Finals

Friday the 12<sup>th</sup> of June 2015

at the

University of Wollongong

from

9.00 am to 4.00pm

This excursion has been planned to supplement work being done in  
**Stage 4 Technology Mandatory and Stage 5 Design & Technology & Engineering**

Course outcomes addressed during this excursion/competition include

- TM 4.1.1 Applies design processes that respond to needs and opportunities in each design project
- TM 4.2.1 generates and communicates creative design ideas and solutions
- TM 4.3.1 applies a broad range of contemporary and appropriate tools, materials and techniques with competence in the development of design projects
- TM 4.5.2 produces quality solutions that respond to identified needs and opportunities in each design project
- TM 4.6.1 applies appropriate evaluation techniques throughout each design project
- DT 5.1.1 analyses and applies a range of design concepts and processes
- DT 5.1.2 applies and justifies an appropriate process of design when developing design ideas and solutions
- DT 5.4.1 develops and evaluates innovative, enterprising and creative design ideas and solutions
- DT 5.6.1 selects and applies management strategies when developing design solutions
- DT 5.6.2 applies risk management practices and works safely in developing quality design solutions
- DT 5.6.3 selects and uses a range of technologies competently in the development and management of quality design solutions
- IT 5.1.1 identifies, assesses and manages the risks and OHS issues associated with the use of a range of materials, hand tools, machine tools and processes
- IT 5.1.2 applies OHS practices to hand tools, machine tools, equipment and processes
- IT 5.2.1 applies design principles in the modification, development and production of projects
- IT 5.2.2 identifies, selects and competently uses a range of hand and machine tools, equipment and processes to produce quality practical projects
- IT 5.4.2 works cooperatively with others in the achievement of common goals

I acknowledge that workplace health & safety is everyone's responsibility and that it is the participating school AND individual student's responsibility to have completed mandatory safe operating procedure training on the following equipment PRIOR to participating in the Aeronautical Velocity Challenge State Finals.

Woodworking hand tools, metalworking hand tools, scroll saw, hot glue gun, battery drill, personal protective equipment.

**Signature:** .....

**Date:** .....

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WOLLONGONG



Please complete the Medical and Consent Information Form on the reverse side of this form.

Please provide full details by completing the Medical Information Form.

**Parent or caregiver contact details**

Name: .....

Address: .....

Home phone: ..... Work: ..... Mobile: .....

**Doctor contact details**

Name: ..... Doctor's telephone: .....

Address: ..... Doctor's telephone: .....

**Emergency contact(s) details (nominated by the parent or caregiver as alternate contact)**

1. Name: ..... Phone: .....

2. Name: ..... Phone: .....

**MEDICAL INFORMATION FORM**

The information provided on ..... / ..... / 20..... (date) by ..... (Guardian's name) is being obtained for the purpose of ascertaining relevant medical information, requirements and other health care related needs about ..... (student name) who is currently enrolled at the school and who may participate in school excursions, sporting activities or other educational or school activities conducted by or in conjunction with XXX High School.

It will be used by the NSW Department of Education and Communities to assist planning, to support students, and to minimise risks when conducting school excursions, sporting or other school activities.

Other persons or agencies that may be provided with this information include, but are not limited to, volunteers and members of external organisations who join with the school or are otherwise involved in the planning or delivery of the excursion, sporting or other school activity; and persons that may be called upon to provide health care treatment or other assistance during or as a consequence of such excursions or activities.

Provision of this information is required by law / voluntary. However, a failure to provide the information may mean that your school will make available a sound alternative educational experience.

Provision of this information will significantly assist the school in planning a safer educational activity. It will be stored securely. If you have any concerns about provision of the information, please contact the school principal to discuss further.

You may correct any personal information provided at any time by contacting the school office.

**List existing medical conditions or illnesses (including asthma, diabetes, epilepsy, allergies, etc). Outline the treatment for each.**

.....  
.....  
.....  
.....

**Outline special dietary needs including possible reaction to inappropriate diet**

.....  
.....  
.....

**Medication(s) to be administered during the excursion. Include name of medication, instructions for administration, time of administration, and any possible reactions**

.....  
.....  
.....

I give consent for my child to receive medical treatment in case of emergency

YES

NO

Special needs (e.g. allergies, medication)

YES

NO

Signature: ..... Date: .....



What is the

# Aeronautical Velocity Challenge???

It's ~~NOT~~ Rocket Science

It's all about **STEM**



This initiative focusses on addressing Australia's shortage of scientists and engineers by engaging groups of students in an array of design & engineering challenges, including; aeronautical design, flight, testing, racing & DESTRUCTION as well as bottle rocket creation, modification, competition & launching. Students compete in teams of four to six students to design, produce, test & evaluate their prototypes. Teams are required to justify their design & engineering decisions verbally to the judging panel.

This competition is an ideal opportunity for schools, students, teachers, community and local industry to engage in practical numeracy and literacy activities in a fun and innovative engaging environment.

The competition has been designed & mapped to address the requirements of both current and future syllabus with packaged assessment units & programs already developed to suit a range of our Technology subjects including Stage 4 Technology Mandatory & Stage 5 Design & Technology, Engineering, & Graphics.

**School Heats completed by 31st March**

**Semi-finals completed by 22nd May**

**Finals Friday the 12th of June Uni Of Wollongong 2015**

For further information, please contact

Brian Barter [bbarter@tcs.nsw.edu.au](mailto:bbarter@tcs.nsw.edu.au) or 8863 2952

Dean Hannah [exciteandeducate@gmail.com](mailto:exciteandeducate@gmail.com) or 0421 919 263

Steve Delaney [steven.delaney1@det.nsw.edu.au](mailto:steven.delaney1@det.nsw.edu.au) or 0409 224 724

Bob Wheway [bobwhe@uow.edu.au](mailto:bobwhe@uow.edu.au) or 0497912574

