ENGINEERING ACTIVITIES FOR SCHOOL STUDENTS

VICTORIA UNIVERSITY

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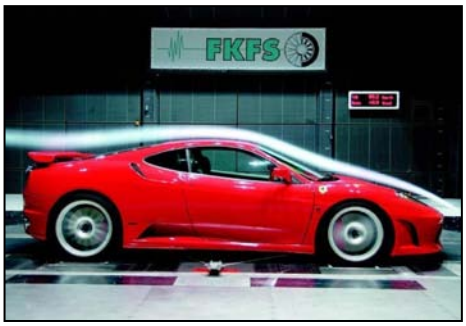
Tsunami. Students will work in teams to design and construct (material provided) a structure to withstand the passing of a seismic wave. The structure will be made to support a load and placed on a floating pontoon in the computer-controlled wave simulation tank. The aim is for the structure to be as light and tall as possible while capable of supporting the load as well as withstanding the largest possible seismic wave. Student will apply principles related to design, stability, structural engineering (strength) as well as wave motion. Duration: up to 3 hrs. Max group size: 30.

Aerodynamic drag. Students will work in teams to design and construct (material provided) a ground vehicle to offer the best possible aerodynamic characteristics. The model will be placed in an instrumented wind tunnel and the drag force produced at various wind speeds will be measured. The aim is to design a model that conforms to the geometric constraints while generating as little aerodynamic resistance (drag force) as possible. Student will apply principles related to design, aerodynamics, fluid properties as well as instrumentation and data acquisition. Duration: up to 3 hrs. Max group size: 30.



Tall buildings for earthquakes. Students will work in teams to design and construct (material provided) a tall building model to withstands seismic ground motion (earthquakes). The structure will be made to support a load and placed on a computer-controlled earthquake simulation machine. The aim is for the structure to be as light and tall as possible while capable of supporting the load as well as withstanding the largest possible earthquake. Student will apply principles related to design, stability, structural engineering (strength) as well as seismic motion. Duration: up to 3 hrs. Max group size: 30.

Shock absorbing landing pad. Students will work in teams to design and construct (material provided) a landing pad to protect a fragile object from damage during a landing. An egg will be dropped onto the landing pad from a pre-determined height and the aim is to ensure that the egg withstands the landing shock without breaking while using the least possible amount of material. Student will apply principles related to design, material properties (elasticity), inertia and shock absorption. Duration: up to 3 hrs. Max group size: 30.

Wind turbine design. Students will work in teams to design and construct (material provided) the blades of a turbine to extract a maximum of energy from wind. Each design will be subjected to efficiency (and survival) tests using an instrumented wind tunnel where the wind and turbine speeds will be measured along with the turbine power output. The aim is to design turbine blades that will extract the wind's energy most effectively for the widest possible range of wind speeds. Student will apply principles related to design, material strength, aerodynamics, balancing & vibration. Duration: up to 3 hrs. Max group size: 30.