Momentum in Two Dimensions
For: Year 12 Physics Students

This workshop links with the 'Motion and Relativity' section of the SACE Stage 2 Physics curriculum. Students carry out an experimental procedure, involving large air tables and plastic pucks, to investigate the law of conservation of momentum.

What will Students do?

This program can be undertaken as a single two-hour workshop or as a full-day visit, the latter including a campus tour and a physics presentation by University lecturers and/or post-graduate physics students.

During the workshop, students:

- Carry out collisions between plastic pucks on an air table and record the collisions using a digital camera and audio-visual software
- Analyse the collision data using Logger Pro (this software traces the position of the pucks frame by frame (26 frames per second), producing a data table and graphs of each puck's movement)
- Calculate the initial and final momentum vectors from the data
- Analyse the initial and final momenta with respect to the Law of Conservation of Momentum, and calculate percentage error to determine the accuracy of their results

If time permits, students can explore whether altering one of the variables that determines momentum affects the universality of the law of conservation of momentum. A number of variables can be considered and explored, including changing the mass of one or both pucks, changing the velocity of one or both pucks, or changing the initial direction/displacement of one or both pucks.

Students can take their movie clips and data files back to school, on hard copy and/or USB, for further analysis.

Timetable for the Full Day Program

Momentum in Two Dimensions Workshop – 2 hours
Break – 20 mins
Campus Tour – 1 hour
Lunch – 35 mins
Physics Presentation, including Career and UniSA Course Information – 45 mins
Evaluation – 10 mins

Total – 5 hours

NB: Session details and timetable changes may occur without notice.

Conditions

- As this program is a practical activity, students and accompanying adults will be required to wear closed in shoes and appropriate dress.
- Teachers will receive confirmation of booking and pre-visit information.