

Editorial

Jurgen Schulte

School of Physics and Advanced Materials

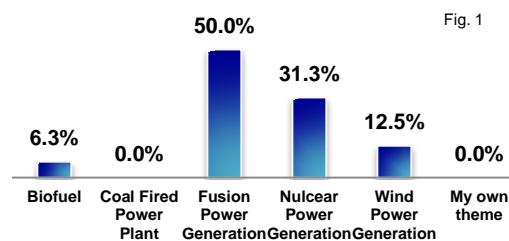
P.O. Box 123, Broadway NSW 2007

E-Mail: Jurgen.Schulte@uts.edu.au

This is the first issue of PAM Review, the peer-reviewed, class specific student research journal of the School of Physics and Advanced Materials at the University of Technology, Sydney. The student journal has been introduced into the subject Energy Science and Technology (68412) to allow for a practical student centered learning experience that is exciting and challenging and helps to facilitate desired graduate outcomes. Energy, Science and Technology is a one-semester subject that covers the thermodynamics of macroscopic and microscopic processes in the context of energy production, energy saving and related applications.

While the lectures cover the theoretical, thermodynamics related background of power generation, the group projects have been introduced to research state of

the art practical realisations of power generation. Students choose from a range of power generation systems for their project or propose a different system they are interested in. The idea behind this open project theme approach is that students will find it a more enjoyable learning experience if they study a project that they are really interested in. Figure 1 shows the project themes that the students selected. Surprisingly, the majority of students (81%) selected nuclear physics related



projects (fusion/nuclear power), a topic area that is not taught in a subject at this school and was not seen as one that students would be interested in.

The compilation of this research journal issue gives students practical learning experience in applying scientific methods to produce a meta-study research paper that can be more than just a literature review. The group work has been designed to create an environment similar to the creation of a real scientific publication, including: gaining expertise in an unknown topic within a short period of time; consulting scientific databases; reading peer-reviewed scientific papers and extracting relevant information; formulating an aim of interest for the meta-study; writing a paper in a prescribed scientific publication format; working in a research team with a range of expertise; managing research and paper writing workloads within a team; acting as a peer-reviewer for other group papers; assessing papers according to prescribed peer-review guidelines; completing the meta-study paper and its submission and the peer-review process within the journal's publication timeline.

This substantial group project replaces one class test and the entire final exam. Assessment of group papers and individual group contributions are informed by the peer-review tool SPARK^{PLUS} which has been used here in all intra- and inter-group peer-review processes.