1 Introduction

The panel sees the department as performing very well in view of the available resources, especially in the areas of research and research training. It appears that there are opportunities to improve the curriculum and how it is taught. As the department grows there is a strong need to adopt formal methods of communication so that staff and students are involved in the strategic direction and plans of the department.

2 Comments on the Terms of Reference

Governance, Leadership and Management Rapid increase in student numbers have created operating tensions.

Regularisation of the timing of departmental meetings and its working subcommittees would improve communication between all of the elements in this rapidly-growing department.

Academic Program The curriculum changes of 2010 have had an impact on the students’ programs and their ability to complete in minimal time. Students noted that they no longer had access to basic skills and concepts that they had in ENGG100 and regretted that these were no longer taught. The IEAust previously praised this course. ENGG200 does not replace it. This seems to be a poor curriculum decision and the unit should be re-established or the material incorporated into an appropriate single unit.

There appear to be OH&S issues, for example with ELEC241 where students were unable to sit down because seats were far too few.

However the department moves forward on curriculum it should consider including Engineers without Borders as one aspect of the 1st-year engineering units as this would fit with university priorities on community engagement.

As part of any curriculum and pedagogy discussion the department should consider the actual time offered in classes or correct handbook entries to reflect time spent.

The Photonics Engineering Major was discontinued in spite of staff in both the Department of Physics and Astronomy and this department having an interest and courses being in place. The reasons behind this decision were not well communicated. The program was not given long to grow before discontinuation.

There is not a base upon which to make plans for a Mechanical Engineering program. The panel cannot comment on this proposal. We feel the department may be expecting to come towards this faster than will be possible. We think a first priority should be to stabilise the EE program and add Mechatronics.
Research The research activity of the department has been recognised in the most recent ERA round as being above world standard and the future plans look sound and achievable and should result in substantial research funding to the department.

Staff outside the main wireless research area tend to have their contributions diminished because they do not contribute to the main critical mass of research effort.

Research Training Students are happy with supervision and relationships with supervisors. There is some confusion around co- or associate supervisor arrangements. Students were unaware of how to access funding for overseas conference attendance, and believed it to have disappeared. There are few or no Australian conferences of sufficient quality, and so overseas conferences are regarded as a necessity. Issues may be more problems with communication than the training itself.

Staff and Student Profile The ratio of technical support staff to academic staff is low. The department currently operates with approximately a 5:1 ratio of academic staff to technical support staff. This is a very large ratio for the electronics discipline, and some work is already contracted out. Universities typically have a ratio better than 4:1, while industry can often run closer to 2:1 in groups concerned with development. Computer support requirements in the electronics discipline are invariably unusual as a consequence of equipment with embedded computers or equipment with close connection to supporting computers and this will need to be addressed.

Community Engagement The department has yet to engage with the PACE program.

Mike Heimlich has a superb program of promotion to high schools.

Future Directions The panel feels that the department has this well planned. The progress to a wireless CRC, Mechatronics, and then Mechanical Engineering all make good sense.

3 Recommendations

1. **Plan for increased numbers in the Project/Thesis and Summer Placement (Internship) courses.** Unlike other taught components these do not offer economies of scale. Given the planned enrolments of 100 students in the internship, the department should put forward a plan for how they will be accommodated. Consideration might be given about how the PACE staff in the Faculty might helpfully support the initiative.

2. **Formalise communication procedures.** The panel observes that messages do not always get through, and staff are not always on the same page. Technical staff identify communication between academics and technical staff as “an issue”. Academic staff are not always aware of decisions that are made. Students complain that they often cannot obtain information about what is going on. Many reported that occasionally emails go unanswered. So-called “watercooler meetings” can be an effective communication and discussion method but tend not to be inclusive. Plans to improve the communication might consider

   - establishment of a formal governance structure with subgroups mirroring the main work of the department: research, teaching, and HDR;
   - moving to utilise meetings of the staff-student liaison committee;
   - establishing a formal undergraduate coordinator.

3. **Establish formal governance structure in the department.** The panel recommends that the department set up a working group to review learning and teaching issues and bring positions to a departmental committee for endorsement. Improvements might be made in the quality of unit outlines including explicit learning outcomes and assessment criteria, deciding course structures, and working with the PACE initiative. The panel strongly recommends that a formal Teaching and Learning Committee be set up.
4. **Establish teaching quality assurance procedures.** It was clear from discussions that excellent teaching is happening but there are no procedures in place to measure this or to guarantee that quality is uniform across all staff and classes. There is also a lot of work yet to be done in this area, for example many unit guides listed “learning outcomes” that were no more than the syllabus with a few words added. The department might consider some staff training in pedagogical requirements (especially tutors and demonstrators), and classroom performance reviewed by qualified, independent commentators, periodically or as required.

5. **Document the true cost of teaching as it is implemented.** The workload models seemed to the panel to be optimistic, and the department to be running unsustainably lean. A workload model that is more in line with true effort and the faculty model should be developed to predict staff requirements for the time when the degree is in a steady-state, after the growth phase, when the books will be expected to balance. In general, the panel was wary of the approach of calculating what can be done with what is available, rather than calculating the cost of what is being done or intended to be done. Such a “balance the books by definition” approach jeopardises quality and conceals the effort being put in by staff.

6. **Increase technical staff to academic staff ratio.** The support staff identified both technical and administrative areas as being close to a workable limit in the current situation, without allowance for increased numbers. This should be closely monitored with the anticipated increase in numbers.

7. **Ensure the staff-student liaison committee hold regular meetings and minute them.** The students complained that current procedures are vague or infrequent. This should be in line with I.E.Aust requirements and should be inclusive of all staff.

8. **Review the current curriculum content and sequence.** There seems to be overlap and holes in the curriculum. Consideration might be given to including some study of statistics. The successful ENGG100 unit should be re-established or the material incorporated into an appropriate unit so that students gain the background skills. The curriculum scope and sequence should be actively monitored by the Departmental Learning and Teaching committee and any proposed modifications prepared for university endorsement.