

Academic Integrity and Pastoral Care: Dealing with Unprofessional Conduct in Engineering Students

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***Abstract:** This paper reports on an approach to unprofessional conduct such as cheating or computer abuse by engineering students. Students who violate behaviour norms are interviewed, and given a chance to explain. The department's Academic Integrity Officer advises on a suitable penalty, and the offence is recorded in the department's Register of Unprofessional Conduct. More serious cases are taken to the University Discipline Committee. Pastoral care is used to pre-empt breaches of discipline. At-risk students are identified early in the course, by diagnostic testing. They are offered remedial, 'foundation' classes, with monitored attendance. Staff are encouraged to identify 'problem' students, who are interviewed and may be referred to specialist help. Initial results show that such interventions are successful in retaining students who would otherwise fail their courses. Instances of unprofessional conduct show a significant decline in the last three years*

Introduction

Since 2004, the Department of Electrical and Computer Engineering (ECE) at the University of Auckland has had a systematic approach to dealing with issues of unprofessional conduct (UC) by its students. This paper describes the approach and how it has developed over the period 2004-2010. A brief review of the literature on unprofessional conduct (mainly cheating) is presented, followed by a description of practice in ECE. Some results are presented showing outcomes of this approach in terms of student academic success, and reduction in numbers of UC cases. The results are discussed and some conclusions drawn.

Cheating and other unprofessional conduct

Dick *et al.* (2003) describe cheating in academic courses as undesirable because ultimately it devalues the degree awarded. It harms the teaching environment, forcing staff to divert effort away from their main role. It harms the student who cheats, leaving them less prepared than they seem; and it harms their fellow students by placing them at a disadvantage. In professional schools such as engineering, the problem is compounded since the degree implies that the recipient is in some way ready for professional life: if they are not, then damage to society, the profession, and the awarding institution can result. Carpenter *et al.* (2006) indicate that students who cheat at college are more likely to engage in other undesirable behaviour such as shoplifting, cheating on income taxes, and substance abuse. They are more likely to go on to cheat in graduate school, and engage in unethical workplace behaviour.

In general, the problem of cheating has been increasing. In the United States in 1964, 58% of engineering students said they had cheated at least once in their courses. By 1996 this figure had increased to 82%. Institutions appear to have been unable to counter this trend effectively. Students have complained about "faculty apathy about cheating", and Selingo (2004) describes staff as "reluctant to confront cheating", because it is "too difficult to prosecute cases".

A number of studies have attempted to describe the problem by surveying student attitudes to cheating [Carpenter *et al.* (2006), Passow *et al.* (2006), Harding, (2000)]. Various measures have been proposed for dealing with the problem, including better communication about academic integrity between staff and students [Carpenter], improved testing procedures, review sessions before tests, and group work [Harding].

Formal records of unprofessional conduct have been kept within the ECE Department at the University of Auckland since 2004. These show that in the early years (2004-2007), all cases were of some form of cheating, mostly plagiarism. Since 2008, however, there have also been recorded cases of other kinds of UC. Most of these can be regarded as some form of computer (or computer network) abuse (Figure 1).

Department response 2004-10

In 2004, in recognition of the growing problem of cheating, the Department appointed an Academic Integrity Officer (AIO). The AIO is responsible for ensuring that cheating cases are dealt with in a consistent way, and that formal records are kept, so that in particular repeat offenders can be identified. Staff are given a simple procedure for dealing with cases: after checking what briefing they had given to students about cheating in their course, and in the assignment in question, they (together with another staff member) interview the student/s concerned. The purpose of the interview is to try to establish the facts of the case, and to allow the student/s to respond.

After the interview, the course coordinator reports to the AIO who advises on appropriate further action, including penalties. This advice is based on previous practice in similar cases. For first offences of, for example, undue collaboration on an assignment, the penalty might be zero marks for the assignment (to all concerned), a formal warning, and an entry in the ECE Register of Unprofessional Conduct (RUC). This entry remains active for three years: if another offence is recorded within this period, it is taken much more seriously and the offender is likely to be referred to the Head of Department for possible referral to the Faculty authorities. The ultimate sanction is the University Discipline Committee which has wide-ranging powers including fines, and suspension from studies. Students are informed that they have the right of appeal at all stages of the process.

The AIO supplies the reporting staff member (usually the course coordinator) with a spreadsheet template for the details of the case. This is completed and returned to the AIO, and entered in the Register. From time to time reports (in general terms) on this activity are made back to the student body.

Since 2008 a number of cases of 'computer abuse' have been reported. These are not cheating as such, but include such activity as using laboratory computers to play games, downloading inappropriate or copyright material, or using other people's identities to do this. In one serious case of abuse a key-logger, capable of capturing others' passwords, was installed onto a lab machine.

These cases are dealt with in the same general way as cheating, and the term 'Unprofessional Conduct' covers both. The staff who report such cases are often the IT staff rather than academics. A standard procedure is to disable the student's network log-in access until they come to the staff member to explain their actions. Penalties include log-in disabling (usually for fairly short periods to avoid disruption to studies and disadvantage to others including project partners), termination of external internet access from the University system, and entry in the RUC. More serious cases are referred to higher levels in the system, as for cheating.

Since 2009 the University has instituted a similar system to that described above, but at the time of writing this deals only with cases of academic misconduct, and not for example computer abuse.

Pastoral care

All of the above is essentially reactive, that is, responding to UC after it has occurred. Since 2008, the ECE Department has also had in place a policy of identifying at-risk students and pre-empting UC by

a variety of measures which are known collectively as *pastoral care*. This is applied especially in Part 2 (second year), which is the first year that the students are in the Department.

Rowe *et al.* (2009) described an approach using remedial tutorials to deal with the academically weak 'tail' in a second-year engineering class. At-risk students were identified by diagnostic testing and invited to remedial classes, where attendance was recorded. Those attending were more likely to pass the course.

In line with Carpenter's findings (2006) that problem students are very likely to have problems in other areas, we make a broad assumption that students who are academically at risk of failing are also more likely to engage in UC. Such students are identified by a variety of methods including their grade-point average from first year; grade obtained in ELECTENG 101, the most relevant first-year course; a diagnostic test set at the beginning of second year (this covers basic circuit concepts which the students should know from the previous year); and Test 1 in ELECTENG 202, *Circuits & Systems*. In addition, feedback from staff on student behaviour is also taken into account.

At-risk students so identified are invited to special, 'foundation' tutorials. These are held once a week and are run by a senior postgraduate student with the assistance of a teaching assistant (TA). The tutorials are aimed at the needs of weaker students and an attempt is made to engage them: for example, a teamwork approach is used in which groups of attendees engage in a 'pub quiz', in which the questions are about the tutorial material, and chocolates are awarded as prizes. For those attending, this approach has been generally successful (see below), but the difficulty is in persuading the at-risk students to attend: only a small proportion (28% in 2010) do so regularly.

Staff are encouraged to identify students who seem to be having difficulty, or whose behaviour is unusual. Such students are contacted by a member of the Department's Academic Integrity and Pastoral Care (AIPC) team and are invited to discuss their problems. They may be referred to the Student Learning Centre, Student Health, or Student Counselling, as appropriate. The AIPC team has both male and female staff members.

The Department's Academic Integrity and Pastoral Care Committee meets regularly to review progress in this area. Practice within this Department is currently being seen as a possible model for adoption elsewhere in the Faculty of Engineering and in other professional faculties.

Analysis and discussion

The AIPC approach described here has two main elements: responding to UC as and when it arises, and trying to prevent UC by a process of identifying at-risk students and making special provision for them. Key features of the first part of this (the response) are

- Keeping detailed records of offences, so that repeat offenders can be identified
- Having one person (the AI Officer) who runs the process, gives objective advice to staff, identifies more serious cases, and ensures a consistency of approach
- Having an AIPC team with both male and female staff members
- Giving feedback to the student body that this process is active.

The second part (pastoral care) uses a series of initiatives to identify and support at-risk students. Foundation tutorials have been run in the second-year course *Circuits & Systems* for three years. In this course in 2008 for a class of 149 students, 42 were identified as being at-risk. Of these, 10 attended 50% or more of the six foundation tutorials offered. Nine of these 10 students subsequently passed the course. Of the other 32 students identified as being at-risk who did not avail themselves of these tutorials, 12 subsequently failed the course. Overall a total of 17 students failed the course, of whom 13 had earlier been identified as being at-risk, with only one attending the foundation tutorials regularly.

In 2009 133 students enrolled in *Circuits & Systems*, and 63 were identified as at-risk. Of these, 20 attended 50% or more of the 13 foundation tutorials offered. Of these 20 students, 17 subsequently passed the course. Of the other 43 students identified as being at-risk who did not attend regularly, 20

subsequently failed and one withdrew before the final exam. Overall a total of 22 students failed the course, including 20 who had earlier been identified as being at-risk, of whom only five attended regularly.

In 2010, out of a class of 174, 96 were identified as at-risk. So 55% (96/174) of the class were considered to be at risk of failing the course, and were invited to foundation tutorials. Only 28% (27/96) of those invited were regular attendees at the tutorials, that is, attended 50% or more of the available tutorials. 74% (20/27) of the students who were regular attendees went on to pass the course. In addition, 84% (38/45) of the students who subsequently failed had been identified as at-risk and invited to the foundation tutorials. Finally, 82% (31/38) of the students who were invited to the foundation tutorials and subsequently failed were not regular attendees.

These figures appear to show that the methods for identifying at-risk students are effective, and that the foundation tutorials definitely improve students' chances of passing the course, provided that they attend regularly. The problem lies in persuading those students to help themselves by attending regularly. Various strategies have been tried by the AIPC team, including sending email reminders to students, and even telephoning them at home, with only limited success. This is an area where further work is needed. One possible academic approach is to use the powerful incentive of coursework marks to make students interact with the course. Peer-marked assignments have been used in our first-year course ELECTENG 101 in 2009 with great success, and it would seem that such an approach would have benefit in Part 2 as well.

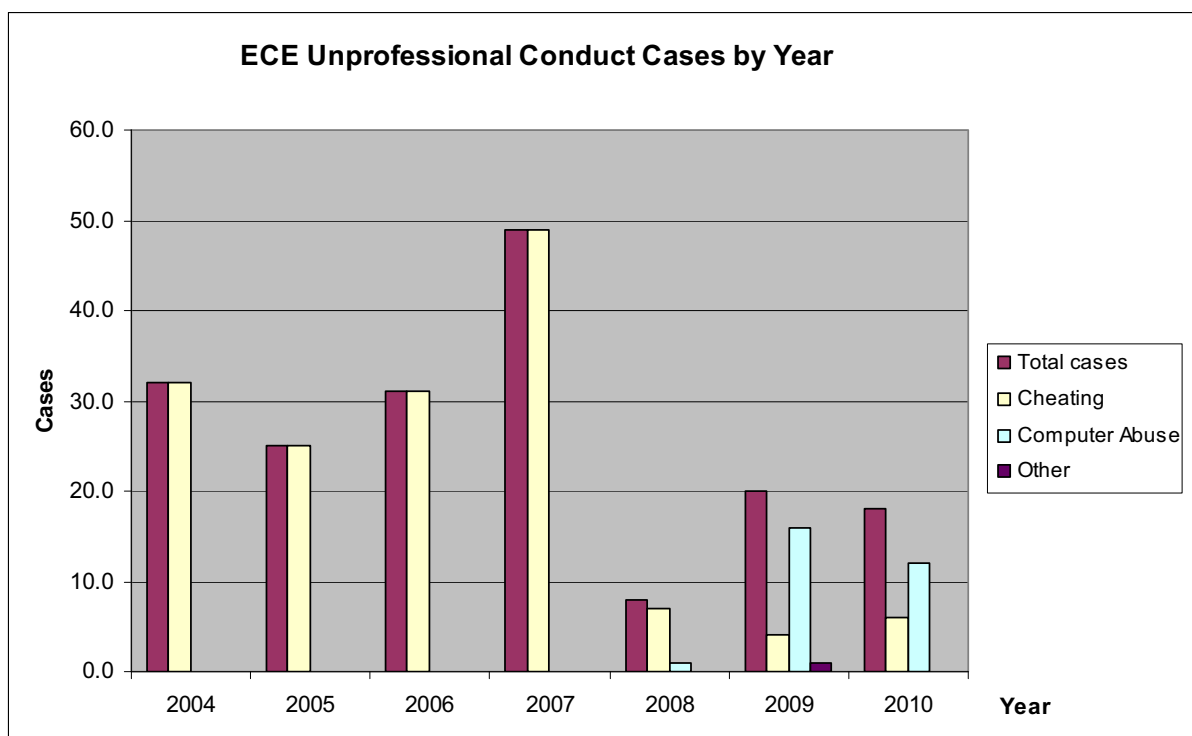


Figure 1: Unprofessional Conduct cases 2004 to September 2010

Figure 1 shows numbers of unprofessional conduct cases in the Department between 2004 and mid-2010. It can be seen that cheating cases have declined significantly following a peak in 2007. Computer-abuse cases have appeared since 2008, but the total number of UC cases is still well below the levels experienced in the period 2004-2007.

These results appear to justify the AIPC approach within the Department, but it is important to try to identify confounding data. No hard data exists, but it should be made clear that it is only possible to report and act on UC cases which are themselves reported by staff. Selingo (2004) noted that staff were reluctant to prosecute such cases: they are often difficult, and take time and energy. We hope that our results are due to our efforts, but have to accept the possibility that fewer cases of UC may be due to staff reluctance to report. Again, there is no evidence for this, and the fact that relatively minor UC cases continue to be reported is taken as a good sign.

Conclusions

A combined approach to unprofessional conduct by engineering students has been found to be effective. Academic integrity is maintained by a system of reacting to, and recording, offences. Students who violate behaviour norms are interviewed by staff, and given a chance to explain. The department's Academic Integrity Officer advises on a suitable penalty, and the offence is recorded in the Department's Register of Unprofessional Conduct. More serious cases are taken to the University Discipline Committee. Pastoral care is used to pre-empt breaches of discipline. At-risk students are identified early in the course, by diagnostic testing. They are offered remedial, 'foundation' classes, with monitored attendance. Staff are encouraged to identify 'problem' students, who are interviewed and may be referred to specialist help. Initial results show that such interventions are successful in retaining students who would otherwise fail their courses. Instances of unprofessional conduct show a significant decline in the last three years. 'AIPC' practice within this department is a possible model for adoption elsewhere.

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