

## How I taught the world's only ethics in mathematics course

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[\(EiM1: The first meeting on Ethics in Mathematics, Cambridge, Apr 20, 2018\)](#)

The University of New South Wales in Sydney taught a 'Professional issues and ethics in mathematics course' 1998-2012. I set it up and taught it most years.

I share my experience.

It's no use asking me for political advice on how to get a course in ethics in mathematics approved. I have no political skills and I didn't cause it to be set up. It fell out of the sky. UNSW is run by a Council dominated by outsiders, who announced that **all** degree programs were to have a discipline-specific course on 'Professional issues and ethics', intended to give students an introduction to the workplace practices they'd face after graduation. Employers were complaining that graduates had good technical knowledge but no idea of workplace and communications skills. [It was also rumoured that the University feared being sued: they wondered if down the track some graduate would behave badly and then say in court "But in my university training they never **told** me I should act ethically."]

The individual disciplines were free to develop the course as they saw fit.

In medicine and law, they'd been doing that for decades. It caught mathematics, uh, unprepared; they'd resisted it but the time had come for action. As I had a background in humanities as well as maths, I was 'invited' to do it. (The computer science school also begged me to do something for them.) That was fine with me and I said yes.

I typically had 40-50 students and 27 contact hours.

It felt like being presented with a greenfield site and a bulldozer and told to 'go for it'. So what to do about content?

The course was about "professional issues" as well as ethics. I took that to mean giving insights into life after graduation, so I looked at job ads in maths in class and I invited visiting speakers from industry to say what it was like – in later years, ex-students of the course itself. I included a brief overview of mathematics. I won't say more about that aspect. [Benefits to School accrued in contacts with industry]

As to ethics, I wondered if I should start with something on foundations/philosophy. That is a tricky decision. (Business ethics books often start with some remarks on utilitarianism, deontology and then leave it to the reader; that won't do.) I decided I should do something, since mathematicians are the sort of people that ask "Where are the axioms?" Ethics is an abstract field like mathematics, not an experimental one, so it's a very fair question, as to where the principles come from.

[A colleague teaching the corresponding course in accountancy asked me, "What can I do about students who think there's no such thing as ethics, that it's all a matter of opinion and

anyone can do what they like?" I said "Fail them. Then if they come and say 'That's not fair', well ..."]

I gave foundations one lecture. I explained briefly the problems of naturalist theories that ethics is just evolved custom, and of divine command theories (both of which I think are attractive to those students who have any theory at all). Then I said that ethics is based (mainly) on the axiom of the inherent worth of persons. For those with a philosophy background, it's a bit Kantian, a bit natural law theory. I didn't go into that explicitly.

I went on to ethical/legal issues in the workplace, mainly to do with "information ethics". Sydney is a big financial centre and most maths graduates go into banking, finance, insurance and similar – there's not much military work or cryptography here. The issues aren't special to mathematics but concern topics like duty of care, conflict of interest, honest dealing, confidentiality, the duty to be properly informed before making decisions, whistleblowing. (That choice of topics is not what I would do for a book on ethics in mathematics or a postgrad course – it was adapted to the future of the students.) I illustrated where possible with local case studies. We have a famous case in Sydney where an actuarial firm produced an estimate of future asbestos-related health claims; they gave the answer the company hiring them wanted, then it was clear within a year that the estimate was rubbish, with serious legal consequences. [Right now we have in Australia a Royal Commission into misconduct in banking and finance; it's producing case studies by the truckload. It's only been going a week and already there are CEOs resigning.]

I didn't do dilemmas, which philosophers often like in ethics courses. The kind of story I like is a clearcut one like "Insider trader caught and jailed."

In my view ethics is not just about distinguishing right from wrong. It's more interesting to distinguish what's allowed but not specially valuable from what's ethically really worthwhile. Making another million for a bank is **OK**, but aren't there more ethically exciting ways to spend a working life? I looked at ethically worthwhile careers for mathematicians. Climate science, for example. One ex-student of the course, Romesh Silva, is a great role model. He became a 'human rights statistician', working on how to gain fairly accurate figures for the numbers of people killed in genocides. He worked in East Timor, Chad and elsewhere.

Assessment: opposite of maths courses: where they're usually examined by short questions to individuals under test conditions, assessment here was mainly by one large group assignment with a written report and oral presentation. Groups had to choose their own question (in consultation) - many felt a sense of intellectual vertigo from having to do that.

Reaction: It varied. Some students enjoyed doing something different, others wanted to get back to their de's and calculations. There was an inevitable problem from the compulsory nature of the course – those who needed it most liked it least. [I recognised the problem because years earlier I'd taught a compulsory course on medieval philosophy to seminarians who wanted to be parish priests]

My colleagues always gave me the fullest support, in the sense that they were ecstatic that I was teaching the course so they didn't have to. They didn't support the existence of the course itself but they weren't hostile.

The course ended when support from on high disappeared. I didn't complain about that. I have other things to do.

[One last thing: I've written a basic [Wikipedia article on 'Ethics in mathematics'](#). Please add to it.]

[Link to video](#) (at 7:27)

Further reading; 'A "[professional issues and ethics in mathematics](#)" course,' *Gazette of the Australian Mathematical Society* 32 (2005).

'[On the parallel between mathematics and morals](#)', *Philosophy* 79 (2004).