

# Video Tutoring of Mathematics for Computer Science

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## Abstract.

As computer science was developing as a discipline it was often a part of a mathematics department and the students of computer science studied the usual first year mathematics course. At our university, students traditionally enter a specialist discipline specific degree (rather than a more general faculty based program with a “major in a discipline” structure). As a result, the mathematics for computer science students in first year has evolved into two mathematics courses which are designed and run specially for them.

For many years the computer science students did not study the usual first year mathematics which could be variously described as a combination of pre-calculus, calculus and linear algebra or as engineering mathematics. They took a discrete mathematics course which now includes an introduction to coding. As the demand for IT related courses has increased, several versions of computer science, software engineering and IT / multimedia programs have been developed. Innovative delivery includes completely online delivery (through Open Learning Australia, OLA) and a modified online delivery with on campus face to face support of Learning Facilitators at our Vietnam campus. Online delivery through a further platform for off-shore courses are planned with the Global Universities Alliance, GUA.

In response to a request from computer science, a new “Mathematics for Computer Scientists” course was designed and run in first semester 2001 in Melbourne and also in the (different dates) first semester in Ho Chi Minh City. This course (one quarter of the semester’s work) includes calculus and an introduction to linear algebra. It is designed to give the students some of the mathematical background necessary to do graphics.

With the delivery in Vietnam of both Discrete Mathematics and Mathematics for Computer Scientists, we started to explore how the teaching and learning of the mathematics courses for computer science students, particularly at our Ho Chi Minh City campus, could be enhanced with some videos prepared by us. At a offshore campus, teaching in English, a video includes audio which gives the students the opportunity to hear a native speaker discuss the topic. Videos have been used widely in teaching: see the comprehensive paper “Virtual Collaborative Learning” by Sipusic et al. (1999).

For the Discrete Mathematics course, the last section on coding is not the traditional textbook material and so we videotaped a presentation of the ideas by following a structured set of examples. For the Mathematics for Computer Scientists course, we selected several topics to illustrate applications to computer science. Our experience with the implementation and student feedback (via survey form) is discussed.

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