Computer Classrooms for Upper Division Mathematics

Alan Knoerr, Tamas Lengyel, Michael McDonald

Occidental College
1600 Campus Road
Los Angeles, CA 90041
knoerr@oxy.edu

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Monies from this grant funded computer equipment for an 18-person computer classroom and enhanced an existing 24-person computer classroom. The new classroom was designed for use by our smaller upper division mathematics courses. This year courses in Data Analysis, Linear Systems, Multivariable Calculus, Real Analysis, Differential Equations, Mathematical Modelling, Mathematica, and Chaos and Fractals have been taught in these rooms. During non-course hours, the room doubles as a laboratory for Calculus courses or as an open computer room for students.

Having a computer classroom, rather than separate computer labs, allows immediate and spontaneous use of the computer as an exploratory teaching and learning tool. The atmosphere in such a learning situation is different than that of a traditional classroom or a traditional laboratory.

Various software has been utilized in the different classes. In Linear Systems and Multivariable Calculus, MATLAB and Derive have been used for in-class demonstrations and independent student investigations on such topics as linear transformations and change of variables. In Real Analysis, Derive has been used as an exploratory tool in investigating such ideas as the convergence of sequences and series, or continuity and uniform continuity of functions. In Data Analysis S-Plus is used to analyze data sets. In Differential Equations and Chaos and Fractals, students and faculty have written programs in Tru-Basic to study vector fields, integral curves, and dynamical systems.

Our poster will describe our equipment and facilities and give examples of how we are using them. A handout will be available detailing the facilities, which may be of use to other institutions designing computer classrooms. We will also distribute curricular materials we have developed which take advantage of this technology.