Upgrading Computer Services
in the Entomology Teaching Laboratory

Proposal to the Computation Advisory Committee
for College of Agriculture Funds

Department of Entomology

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A. Project Overview and Expected Benefits

The Department of Entomology has put significant effort into improving teaching excellence in the department through the use of new technology. We have consolidated all of our laboratory teaching into one laboratory room instead of three. This laboratory is equipped with a trinocular stereo microscope with video camera, VCR, and laserdisc player. Video from these sources is sent through a computer to a ceiling-mounted video projector. The classroom currently has a PowerMac 7500 (produced in 1995). This computer has been upgraded to 192 MB of RAM but video-in is limited to 320 x 240 and it is showing its age. In this proposal we request funds to replace the PowerMac 7500 with a modern computer, specifically a PowerMac G4 with built-in digital video support. A media converter is also requested to support "legacy" composite video.

The teaching laboratory is heavily used throughout the day for entomology classes that have a laboratory component. Additionally, the laboratory is used for special projects for both undergraduates and graduate students.

The computer allows digital capture of images both from the microscope and from video recordings. The timing of insect behavior is unpredictable and often cannot be readily reproduced in a laboratory course setting. However, the behavior can be captured on videotape and then digitized for incorporation into computer-aided classroom lectures. Instructors can quickly jump to any point in the clip, play it back in slow motion, or illustrate a point using a single frame in context. Importantly, these materials can be made available over a network so that students can access them outside the classroom. Classes which do not have a lab would benefit from the inclusion of visual demonstrations; digital video would allow students to be exposed to laboratory-type materials in class as well as in the form of assignments, thereby enhancing the quality of the students' educational experience in this course. With our continuing and enhanced commitment to distance education, the benefits of this dedicated teaching laboratory computer should also be obvious in the capabilities we will now have to provide digitized images and lecture materials to remote sites in Iowa.
Thus, the proposed system will provide several important capabilities. First, it will serve as a dedicated computer in our entomology teaching laboratory for driving the display of live specimens from the microscope or prepared materials from videotape, PowerPoint presentations and other software, such as economic-threshold predicting programs and expert systems. Secondly, when the lab is not being used for teaching, the same system will act as a course development station where faculty or students can capture digital video or still images from a video camera. Third, it will serve as our site for developing distance learning materials.

The facility is available to faculty and to graduate teaching assistants preparing and delivering educational materials, and is also be open to undergraduate and graduate students for special projects. Scheduling of the facility is handled by Kelly Kyle, the departmental secretary. Since we are requesting only one computer, only one student or faculty member would be able to work at a time. The facility is available during regular business hours when classes are not meeting in the laboratory, and at other times by special arrangement.

The further involvement by our faculty in the technological enhancement of our teaching would improve teaching for at least 165 students per year on campus taking these courses, and ca. 75 students per year in our current off-campus distance education effort, as well as students using the facility for special projects. As the number of courses and educational packages we develop for off campus distance learning programs increase, this number should increase dramatically.

The facility referred to in this proposal is the entomology teaching laboratory (room 433 Science II), as described above. See the attached Appendix for a sketch.

**Support and Maintenance**

Costs for support and maintenance will be budgeted into the student computer fee money received by the department. Training materials and hands-on instruction in the use of the system is provided by John VanDyk, the Program Coordinator for the Department of Entomology.
Table 1. Full Itemized Budget

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<thead>
<tr>
<th>Description</th>
<th>Number</th>
<th>Unit Cost</th>
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<th>From Other</th>
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<tr>
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<td>2962</td>
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<tr>
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<td>USB ProPresenter</td>
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Total Request $4,071

Table 2. Minimum Feasible Itemized Budget

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Total Request $2962
Appendix: room 433 Science II

Cabinet with VCR, laserdisc

Computer

Microscope

Lab Bench

Lab Bench

Lab Bench

Projector (mounted on ceiling)

Projector Screen

Hood

Door