GEORGIA STATE UNIVERSITY
Proposal for the Use of FY2003 Technology Fees

“Computer-assisted and Inquiry-based Instruction and Learning in Kinesiology”

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Department of Kinesiology and Health
College of Education
FY03_2.2.3 Computer-assisted and Inquiry-based Instruction and Learning in Kinesiology

1. Project Short Title

5-8 Word Project Title

Computer-assisted and Inquiry-based Instruction and Learning in Kinesiology

2. Total Requested Amount (reference to funding for “Years Following” removed)

Fiscal Year 2003

$ 61,750

3. Executive Summary

Project Description (Three or four sentences)

The purpose of this project is to integrate computer-assisted instruction and inquiry-based learning in anatomy and physiology throughout the Kinesiology curriculum. This will be accomplished by purchasing discipline-specific hardware and software, and by establishing and staffing a computer learning center with 4 workstations for undergraduate and graduate student access.

4. Project Description

Kinesiology is defined as the study of movement, usually related to human movement in pursuit of physical activity, exercise and sport. This diverse and interdisciplinary field draws from many academic disciplines, but a common core of knowledge that permeates the Kinesiology curriculum is a thorough understanding of the structure and function of the human body, particularly in response to movement and exercise. These concepts are initiated in early foundation courses in the curriculum, and are repeated, reinforced and expanded upon in more advanced courses in both the undergraduate and graduate degree programs.

A fundamental basis for understanding Kinesiology is a comprehensive knowledge of the structure and function of the human body and how it responds and adapts to movement. Integration of multimedia anatomy and physiology programs will allow for consistent presentation of these concepts throughout the curriculum, and will allow student access to this specialized software in an independent, interactive environment.
A key component of the Kinesiology curriculum is experiential learning, determining through direct observation individual responses and adaptations of the body to movement. The goal of incorporating specialized hardware and software is to involve students through participation in physical and physiological data acquisition and analysis rather than simple demonstration. More advanced courses would build on this base of participation, and would provide the tools to encourage student learning by guided inquiry.

The goal of this proposal is to purchase discipline-specific hardware and software in anatomy and physiology, and to assist faculty in incorporating these tools into appropriate courses in order to improve instruction and learning. A further goal is to create student access to these same tools by establishing a 4-workstation computer learning center. This learning center will provide now-unavailable access to these specialized tools for assigned laboratory tasks of data acquisition and analysis, searching research databases and organizing results, independent study and inquiry, and self-paced multimedia learning.

The ADAM anatomy and physiology software in this proposal has a 3-fold function. This software can be incorporated into classroom or laboratory lectures to enhance presentation and understanding of anatomical and physiological material. These multimedia programs are particularly well-suited for quickly and easily viewing anatomical structures, or for visualizing dynamic processes of physiological systems. The programs also function well as stand-alone learning modules that students can explore at their own pace in an independent environment. Finally, the software can be easily used to incorporate images or animations into student presentations, reports, handouts, etc. The BioPac Student Laboratory System is an integrated data acquisition and analysis hardware and software system that allows students to easily set up a wide variety of measurement interfaces, collect physiological data (e.g., heart rate, blood pressure, ventilation, ECG, EMG, etc.), and analyze for greater understanding of physiological function. Students may follow pre-established laboratory instructions, or may use the flexibility of this system to design and implement their own laboratory activities to answer compelling questions (inquiry-based instruction). An important aspect of inquiry-based instruction is the understanding of the current state of knowledge, and in this plan, students will have access to Reference Manager, a tool they can use to access and organize a substantial database of research articles both on-line and in the department.

Because this common core of knowledge permeates the Kinesiology curriculum, this proposal has the potential to have a large impact on instruction and learning in at least 7 undergraduate and graduate courses, and some level of impact on approximately 25 other courses.

5. Relevance to Regents Guidelines

The implementation of this proposal speaks directly to items 1, 2, 3, and 6 in the Regent’s Technology Fee Guidelines:
1. The outcome of this proposal would be to provide discipline-specific hardware and software for the direct benefit of students in the Kinesiology academic programs, as well as for a number of students from other academic programs that take KH courses. The software and hardware would be used in the classroom in a number of classes in the curriculum, in laboratories, and by students working independently. This equipment and software will be used in basic and advanced undergraduate courses as well as in graduate courses.

2. The establishment of a small computer learning center will provide students with access to computer-based educational tools that they do not now have easy access to, and to discipline-specific software and hardware that for which they currently have no access.

3. This proposal includes software and hardware that will allow for the development of specialized laboratory activities emphasizing guided inquiry, rather than observation of demonstrations.

6. A component of this proposal includes staffing the new computer learning center with doctoral-level graduate assistants. It is anticipated that this staffing will allow for increased access of students to the computer-based material, and will provide individualized instruction and assistance that should greatly improve student orientation to the technology-based resources, reduce student frustration, and increase student productivity and learning.

6. Relevance to Strategic Plan(s)

This proposal seeks resources for program enhancement that align directly with specific points of the Strategic Plans of the University, College of Education, and Department of Kinesiology and Health. Excerpts from these plans are quoted below, but this plan proposes to meet these goals and objectives in 2 ways: 1) incorporating appropriate technology-based instructional methods into the classroom and laboratory in order to improve instruction and understanding; and 2) to increase access to and utilization of computer-based technology by students to enhance learning.

University Strategic Plan
“… become and remain current in the application of computing and information technologies”
“All students should have ready access to computing resources and an opportunity to develop information management skills for lifelong learning”

University Information Technology Strategic Plan
5.2 A University Goal: Technology-enabled Faculty, Staff and Students
   5.2.1 Ensure Faculty and Staff Development in Technology
   5.2.2 Provide Appropriate Workstation Support for Faculty and Staff
   5.2.3 Promote Effective Research Computing
5.2.4 Foster Technology Experimentation
5.2.5 Provide Effective Information Technology Services for Students

5.3 A University Goal: Technology-enhanced Education
  5.3.1 Establish Appropriate Levels of Technology in Classrooms
  5.3.2 Ensure Availability of Information Technology Resources for Students
  5.3.3 Engage the Academic Community in the Use of Technology

College of Education Strategic Plan
Principles of Professional Education
Inquiry – faculty involve students in making the university a center of inquiry
Goals – Quality
  Continue to strengthen subject matter knowledge in the academic disciplines
  Ensure our … graduates have expert knowledge … of technology
  Continue to enhance and strengthen programs within the college which prepare professionals working in contexts other than schools
  Strengthen collaborative and interdisciplinary programs such as … exercise science, sports medicine, biomechanics …

Department of Kinesiology and Health Strategic Plan
Departmental Planning Priorities
  “Increase accessibility to and use of technology in teaching and research”
Short Range Objectives
  “Identify and obtain instructional materials, technology, equipment and space which would enhance classroom effectiveness”
  “Improve faculty knowledge and use of alternative methods of teaching”
  “Improve faculty knowledge and use of instructional technology and services available in the university”
Long Range Objectives
  “Explore and support ways for faculty to develop interdisciplinary instructional programs”

7. Impact on Students Served

There are over 400 undergraduate and graduate students in the Department of Kinesiology and Health, with a large number of additional students from other programs that take selected courses offered by our department. The incorporation of the proposed discipline-specific software throughout our curriculum has the potential to influence instruction in approximately 15 undergraduate courses and 20 graduate courses. This proposal has the potential to impact students in the academic disciplines of Exercise Science, Sports Medicine, Physical Education, and Recreation from our department, as well as students from allied health sciences such as Nutrition and Physical Therapy.
The software would be available to faculty for incorporation into relevant courses, a task that will be assisted by a doctoral-level graduate assistant. Students will have access to the software and laboratory hardware in the proposed computer learning center which will be staffed by graduate assistants from 9 to 5 on weekdays. The facility will be available on selected evenings, usually associated with courses or laboratories taught in the evening.

The workstations will have the BioPac Laboratory software installed, and the students will check out the appropriate data acquisition hardware for the assigned laboratory activity. The ADAM Anatomy and Physiology software will be available for students on CD ROM that can be checked out for independent study in the learning center. The Reference Manager software will be available on the 2 networked computer stations, and students will have access to both electronic and hardcopy versions of research papers.

8. Justification of Funding Requirements for Fiscal Year 2003

<table>
<thead>
<tr>
<th>Object of Expense</th>
<th>Itemized Descriptions</th>
<th>Quantity</th>
<th>Extended $ Total</th>
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<tbody>
<tr>
<td>Staff Salaries</td>
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<tr>
<td>Fringe Benefits</td>
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<td>$</td>
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<td>Student Salaries</td>
<td>GRA III</td>
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<td>Equipment (Note: Use standard dollar amounts and replacement thresholds from sections 10/11, or provide explanation in sections 10/11)</td>
<td>Workstations (Windows)</td>
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<td>$7,200</td>
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<tr>
<td></td>
<td>BioPac Student Lab Ultimate System (Windows) – hardware and software</td>
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<td>$26,000</td>
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<td></td>
<td>Workstation Furniture and Chairs</td>
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<td>Printers – HP LaserJet 1200</td>
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<td>Software</td>
<td>ADAM Interactive Anatomy 3.0</td>
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<td>ADAM Interactive Physiology</td>
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<td>ADAM Anatomy Practice</td>
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<td>ADAM Media</td>
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<tr>
<td></td>
<td>Reference Manager – 5 user concurrent license</td>
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<td>$2,100</td>
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<td>Maintenance or Contractual Services</td>
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<td>Supplies</td>
<td>BioPac Laboratory Supplies – electrodes, filters, gel, noseclips, mouthpieces, cables, adhesive disks, etc.</td>
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<td>$2,000</td>
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<tr>
<td>Construction Services (Requires review of Planning &amp; Facilities)</td>
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<td></td>
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<tr>
<td>Network Connections and Infrastructure Costs (Requires review of UCCS)</td>
<td></td>
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<td>$</td>
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</table>
9. Consequences of Partial Funding

Only 75% funded:

The proposed project would remain viable at 75% funding, with the obvious result being a reduction in the availability of the hardware and software to the students and supervision and staffing. To reduce $15,000 from the proposed budget, 1 BioPac Student Lab System ($6,500), 1 GRA position ($8,000), and 2 printers ($750) would be eliminated.

Only 50% funded:

Components of the proposed project would be viable at 50% funding, but with severely reduced student access to these technology tools. To achieve 50% funding of $30,375 most of the software and computer equipment could be purchased, but the specialized hardware/software for laboratory-based inquiry (BioPac Student Lab Systems) would have to be reduced to 2 systems (saving $13,000), creating a bottleneck for access to laboratory activities. The other major reduction would be the elimination of the GRA funding (saving $16,000) which would make implementation of the proposal more difficult, and daily supervision of student access and activities impossible with current resources.

10. Standard Dollar Amounts

The Sports Arena, location of most Kinesiology classes and labs, currently does not have any student-accessible computer workstations. This proposal would fund 4 Windows workstations at standard amounts (4 @ $1,800 = $7,200) to form a small computer learning center that can be accessed by students during laboratory activities, or throughout the day to utilize the proposed discipline-specific hardware and software.

11. Standard Replacement Thresholds

Not applicable

12. Prerequisite, Non-Technology Fee, Funding

Not applicable

13. Matching Funds

None

14. Staffing and Other Support Availability
This proposal includes a request for funding 2 doctoral-level GRA positions to assist with the integration of this technology into the Kinesiology curriculum and to supervise the computer learning center. Two GRA positions, each at 50% FTE, would allow for staffing and access to the center 40 hours per week. Because this type of facility does not currently exist within the Department of Kinesiology and Health, there is no current staff allocation for this function. An existing staff position within the department, our Research Equipment Specialist, may be available to assist with technical computer issues (installation, troubleshooting, etc.) on a limited basis. The unit responsible for this facility would be the Department of Kinesiology and Health, supervised by Dr. Jeffrey C. Rupp, Department Chair.

15. Space Availability

It is proposed that the small computer learning center (4 workstations) be placed in the Sports Arena, Room G18, the Applied Physiology Laboratory of the Department of Kinesiology and Health. This space is currently assigned to the Department of Kinesiology and Health, and serves a major instructional role in the curriculum of the department. It is logical to locate this small computer learning center in an area where most of the laboratory activities occur, and where students can access the equipment for independent study and learning. The space is sufficient in size, and will not require any renovation.

16. Impact on Facilities

None beyond current levels. The area allocated has sufficient space for 4 computer workstations and has adequate HVAC capabilities for this function, which would not require a change in the current function of the room. The proposed project does not have any renovation or construction requirements.

17. Impact on Computing/Network Infrastructure

None beyond current levels. The space already has 2 network drops available for the 2 networked workstations.

18. Post-Project Assessment Criteria

1. Inclusion of technology-based resources into course content:
   - Determine the specific departmental courses that may benefit from inclusion of this technology
   - Review course materials and interview faculty to determine degree of inclusion into course content

2. Survey student response to inclusion of technology in course content – this can be accomplished anonymously through the WebCT survey tool in each course; current student evaluation instrument does not have a question specific to
technology, but students can be encouraged to comment in the open comment area of the instrument.

3. Track student use of computer workstations and software – this can be accomplished because students will be required to check out the CD ROMs.

19. Review and Acknowledgements

Attach electronic notes or documentation showing that the following units or administrators have reviewed or acknowledged this proposal:
Dean or functional unit endorsement
Matching funds commitment from appropriate fiscal officer
CBSAC approval, if necessary
University Computing and Communications Services review or acknowledgement, if necessary
Planning and Facilities review or acknowledgement, if necessary

Planning and Facilities review or acknowledgement, if necessary