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**UNIVERSITY TEACHING GRANTS
APPLICATION**

NAME: J.D. Andrade

RANK: Professor

DEPARTMENT: Bioengineering

CHAIR: R. Normann

CAMPUS ADDRESS: 2480 MEB

PHONE: 581-4379

When would the grant activities be undertaken? Spring, 1994

SUMMARY OF PROJECT (not more than 150 words):

I propose to offer a course Spring quarter, 1994 titled, "Science Projects for the Utah Science Center," as a special topics/special projects course for advanced undergraduates (Bioengineering 595). I offered a pilot version of such a course in Spring 1993 and had 12 students from diverse backgrounds who self assembled into two groups and developed preliminary project concepts for the Utah Science Center Program Committee, one on an interactive biosphere and the second on chaos and fractal phenomena in health and medicine. I propose to build on this experience by offering a course for up to 25 students in Spring 1994, assembled into 5 project teams, each team representing a variety of disciplines and academic interests, and each focused on a unique, hands-on, discovery-based, science/arts education project.

The development of such projects takes money, particularly resources to bring key speakers and consultants in, purchase minimal supplies and reference materials, and for limited travel to certain sites. The funds requested would be used solely for expenses associated with the conduct of this course.

DATE: 3 November 1993

SIGNATURE: 

SEND TO: University Teaching Committee
120e Park Bldg.

**University Teaching Grant Proposal:
Science/Art Projects for
the Utah Science Center**

Much research in learning and education concludes that a hands-on, project-based approach, using topics which are related or relevant to the students' intrinsic interests, are the most effective way to experience and to learn. Undergraduate students who do get involved in project-based learning often find it irrelevant because the projects are devised or concocted solely as a learning experience and appear to have no practical value or use beyond that immediate learning objective. One of the reasons that service learning is so effective is that students can see application of their efforts in society.

We now have a unique opportunity to involve significant numbers of students in hands-on, project-based, learning experiences by involving them in projects relevant to the emerging Utah Science Center.

The major state effort to develop a premier, hands-on, discovery-based science and technology center for the state of Utah provides a unique and special opportunity. The state of Utah is now funding a site feasibility study involving a close interaction and collaboration between the Utah Arts Council and the Utah Science Center Authority. This has led to a strong interest in interactive, hands-on exhibits which involve the arts, the sciences, and technology. It provides a unique opportunity to show the synergism and interaction between these fields.

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phenomena in health and medicine. I propose to build on this experience by offering a course for up to 25 students in Spring 1994, assembled into 5 project teams, each team representing a variety of disciplines and academic interests, and each focused on a unique, hands-on, discovery-based, science/arts education project.

The development of such projects takes money, particularly resources to bring key speakers and consultants in, purchase minimal supplies and reference materials, and for limited travel to certain sites. The funds requested would be used solely for expenses associated with the conduct of this course.

I expect that the experience gained by a Spring, 1994 offering will provide me with the information and experience with which to solicit outside funds to offer this course on a regular basis.

I would also hope to encourage faculty in other departments to offer parallel or comparable courses for their students as appropriate.

The availability of this course will be announced by ads in the Daily Utah Chronicle and by announcements that will be sent to all appropriate departments on campus. Students will be admitted by consent of the instructor. Criteria for acceptance into this course are sufficient commitment and interest to the project-based education concept, and willingness and eagerness to work as part of a group. If the demand is overwhelming then the selection would also be based by appropriate department or major balance, that is, a balance of students from the arts, the sciences, and engineering.

UNIVERSITY TEACHING GRANTS

BUDGET

Supplies and Travel

1. Supplies (please specify):

<u>Lab Supplies</u>	<u>\$ 400.00</u>
<u>Machining/Woodworking</u>	<u>\$ 450.00</u>
<u>Reference Materials</u>	<u>\$ 150.00</u>
<u> </u>	<u>\$ _____</u>
<u> </u>	<u>\$ _____</u>

2. Travel Costs (please specify):

<u>5 groups X \$200/group (see budget for</u>	<u>\$ 1000.00</u>
<u>justification -- next page).</u>	<u>\$ _____</u>
<u> </u>	<u>\$ _____</u>
<u> </u>	<u>\$ _____</u>
<u> </u>	<u>\$ _____</u>
<u> </u>	<u>\$ _____</u>

TOTAL (\$2,000 Maximum)

\$ 2000.00

Budget Justification

1) Supplies:

The supplies category are for materials required for the various projects, for background research, initial feasibility study, project development, and prototyping. They include modest general laboratory supplies, and costs of computer searches and inter-library loans.

2) Travel Costs:

Travel is primarily for the students involved to consult and interact with science project professionals at interactive science and technology centers on the West Coast, such as the Exploratorium (San Francisco), the Oregon Museum of Science & Industry (Portland), and the Pacific Science Center (Seattle). These trips will be made using the least expensive means and the minimum possible expense. We have budgeted \$200 per group for the five groups. This should allow up to two students per group to be involved in a visit to an appropriate center on the west coast. These funds would be utilized solely for student travel and not for university faculty or staff travel or support.

3) Matching Funds:

We anticipate that funds allocated will be matched at least one to one by donations and contributions from other sources interested in the Utah Science Center initiative.