Request for Proposals for Innovations in Uses of Technology in Instruction
2007 – 2008

Principal Investigator Contact Information

Name: Dr. Wendy Kumar
College: Liberal Arts And Sciences
Campus Address: 211 Bryant Space Science Center
Phone: 352-392-xxxx
E-mail: wkumar@ufl.edu
Department: Astronomy
P.O. Box: 112055
Fax: 352-392-xxxx

Title of Project

Planetary Motion Simulator

Introduction

The Introduction to Astronomy course currently uses text and static graphics to explain the forces that act upon planets and their orbits. The mathematical concepts that are used to describe planetary movement can be daunting for the beginning student.

Project Goals

- Create an informational module that explains the forces that affect planetary motion.
- Develop a simulation that illustrates planetary movement graphically and allows the user to control:
  - Planet position
  - Planetary mass
  - Effects of additional planet(s)
  - Changes in planetary motion over time
- Create case study scenarios that require the user to explain the factors that may cause astronomical events.

Improvements to learning

Currently, students learn the mathematical formulas that control planetary movement. The simulation would allow the users to visualize the forces that are represented by the formulas and to draw conclusions as to what happens when the forces act upon planets.

Innovation

While the formulas that describe planetary motion have been in existence for centuries, they may not be easily understood by the beginning student. Using the formulas to create a graphic interface makes planetary astronomy a more approachable topic. This is

particularly desirable for the Introduction to Astronomy class as it is taken be a large number of non-majors as a general elective.

Student audience reached

This simulation would be helpful to high school students as well as to college freshmen.

Portability

This simulation could be helpful in the study of Physics and Geography as well as Astronomy.

Potential for reducing costs

The planetary motion simulation would be a component of the new online version of the Introduction to Astronomy course. The online format would allow for a larger enrollment. It allows more effective instruction for the Introduction to Astronomy Students as well as providing access to high school students. This simulation would serve to introduce potential astronomy majors to the Astronomy program at the University of Florida.

Assessment

Students will complete a preliminary survey before utilizing the simulation. Upon completion of the simulation, students will complete a series of quiz questions that are currently used in the Introduction to Astronomy course. The project success can be gauged by comparing quiz and survey results to quiz results from previous live classes.

Sustainability

This simulator is the beginning of a series of online Astronomy components to be developed for the online Introduction to Astronomy course. It will serve as a seed grant for funding for additional simulations. These modules will include: simulated star, black hole simulator, and planetary magnetic field simulator.

Budget	
Custom Flash simulation developed by CITT	$7,000.00
Adobe Studio Software, for creation of informational module, assessment and webpage	$289.95
Total Requested	$7,289.95
Astronomy Department Matching Funds: Part time Graduate Assistant to create informational module, assessment and webpage	$4,000.00
Total Project Cost	$11,289.95