Miami-Dade Community College

PHY 3152 B Technology in Physics Teaching

PHY 3152

Course Description

This course will expose the prospective teacher to a broad collection of technologies currently used in the physics classroom environment and beyond. The student will produce specific applications for varied educational settings, demonstrate a command of the most popular tools, and design original projects using the available technology. **3 credits**

Pre-requisites: PHY2049, PHY2049L, PHY3042C

Course Competencies

Competency 1. The student will demonstrate knowledge, comprehension, and application of technology tools in the lecture setting by:

- a) Programming and using computer simulations.
- b) Creating and analyzing video clips.
- c) Designing and using video-based demonstrations.
- d) Utilizing computer projectors and video projectors in teaching activities.
- e) Integrating the Internet as a lecture tool in teaching activities.

Competency 2. The student will demonstrate knowledge, comprehension, and application of technology tools in a recitation setting by:

- a) Comparing the most common operating systems: Windows, Linux, and Mac OS X.
- b) Utilizing class resources and problem-solving tools available on the web.
- c) Using spreadsheets for problem solving and simulations.
- d) Utilizing a variety of simulation tools to clarify physics concepts and solve problems.
- e) Using varied mathematical and scientific software, such as Mathematica, Maple, MathCAD, etc. for problem solving.
- f) Utilizing spreadsheets for student's evaluation and grade processing.

Competency 3. The student will demonstrate knowledge, comprehension, and application of technology tools in a laboratory setting by:

    a) Using a variety of analog and digital instruments to collect data.
    b) Data collection: hardware and software available from typical vendors.
    c) Using spreadsheets, as well as more sophisticated software such to analyze data.
    d) Using video cameras and video analysis software to collect and analyze data.
    e) Using a variety of interfaces, connectors, wires, and networks to set up and maintain a computer-intensive laboratory.
    f) Using servers and software for automated data collection.

Competency 4. The student will demonstrate knowledge, comprehension, and application of technology tools as course supplements by:

    a) Integrating presentation software as part of class presentations
    b) Using communication software as a component of student-student and student-instructor communication.
    c) Creating and managing homework assignments using resources such as Web Assign.
    d) Creating web-enhanced courses using resources such as WebCT.

The mission of Miami-Dade Community College is to provide accessible, affordable, high quality education
by keeping the learner's needs at the center of decision making and working in partnership
with its dynamic, multi-cultural community.