Honolulu Community College
General Education – DIVERSIFICATION DESIGNATION
Certification and Recertification
Application Form
Spring 2012

APPLICANT: Paul Sherard

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COURSE ALPHA and NUMBER: PHYS 100

COURSE TITLE: Survey of Physics

ESTIMATED NUMBER OF SECTIONS:
Fall: 1
Spring: 1

APPLICATION IS FOR:
☐ New Course ☐ Modified Course X Existing Course ☐ Re-designation

☐ Certification X Re-Certification. Date of last certification:

DIVERSIFICATION AREA DESIGNATION SOUGHT:
☐ DA (Arts) X DP (Physical Sciences)
☐ DB (Biological Sciences)
☐ DH (Humanities)
☐ DL (Literature and Language) ☐ DS (Social Sciences)

What percentage of the CONTENT of this course focuses on this diversification area? 100%

What percentage of CLASS MEETINGS focuses on this diversification area? 100%
1. **Hallmarks and SLOs.** Please explain how course-specific SLOs align with the diversification area’s hallmarks.

**DP.1 uses the terminology of the physical sciences:**
SLO 1: Identify the relevant physics that applies to given physical situations
SLO 2: Provide a qualitative explanation of how the relevant physics applies to the given physical situation

When identifying relative physics concepts students learn terminology such as kinetic energy, potential energy, momentum, work, electric field, charge, electric potential, diffraction, interference, etc. In order to give qualitative explanations of physics problems students must understand relevant terminology such as listed above.

**DP.2 involves knowledge and theories relating to processes in the physical sciences:**
SLO 2: Provide a qualitative explanation of how the relevant physics applies to the given physical situation
SLO 3: Quantitatively apply the known physics to obtain solutions to real physical problems.

This course is involves the study of basic physics which includes Newtonian Mechanics, heat, sound, electromagnetism, and optics. This material, by definition, is related to processes in the physical sciences and physical principles. Students are expected to utilize theories associated with these subjects both qualitatively and quantitatively.

**DP.3 demonstrates inquiry that involves observation/experiment and reasoning and mathematics:**
SLO 3: Quantitatively apply the known physics to obtain solutions to real physical problems
SLO 4: Demonstrate an understanding of the applicable physics by assessing the accuracy and correctness of all results

This course include conceptual understanding of physical phenomena along with mathematical formulation of physics concepts throughout the course. Topics such as heat transfer, Ohm’s law, and tidal forces are presented in terms of experimental evidence. Topics and relevant physics equations are discussed in terms of experimental observation and the scientific method.

2. **Assessment strategies.** Explain assessment strategies you have used (or plan to use) to measure the degree to which students exit the course with the course-specific SLOs. If there are multiple sections of the course taught by different instructors, please discuss how assessment is (or will be) carried out across instructors.

Formative assessment is done during preparation for exams. Such in-class preparation may consist to “quiz-show” type reinforcement where students compete in teams or instead students doing practice problems in teams with Instructor feedback in both cases. Such formative assessment are typically graded as extra-credit in order to reward participation and encourage students to work together.
Summative assessment includes summative tests and graded homework problems.

The summative tests are multiple choice. These tests emphasize the course SLOs. For instance:
(SLO1) Students must identify physical phenomena for a given situation, for example conservation of angular momentum.
(SLO2) Students must indicate proper formula that physical situation applies to such as F=ma.
(SLO3) Students must use given values to obtain a numerical answer.
(SLO4) Multiple choice selection will indicate how well student understands accuracy and units of their result.

Weekly homework problems are online assignments that verify that students are keeping up with the textbook reading and lecture material.

3. **Assessment of assessment.** How have you used (or plan to use) the assessment findings to modify or improve this course? If there are multiple sections of the course taught by different instructors, please discuss how review of assessment results is (or will be) carried out across instructors.

As with any course, improvements can always be made. One recent assessment is how useful is online homework for such a course as this. Indications are that students find online homework to be useful because it gives them a platform to work with anywhere they wish. As far as summative tests, confusing or overly difficult problems are continually culled from the set of available problems. Exam results can be compared semester to semester to see if there are drastic variations. In that case, how the subject matter may presented in a different way. Knowledge survey results can pinpoint weaknesses in student learning in certain areas. Again, presentation of subject matter can then be adjusted appropriately.

If there are more than one instructor teaching the course they would meet to make sure the courses are congruent. It would be understood that similar or same questions are used for exams such that a proper comparison can be made across the board.
DIVERSIFICATION BOARD DECISION:

☐ Approved
   Re-Certification Due: ______________________

☐ Not approved
   If not approved, reasons for disapproval:
   ________________________________________

Diversification Board Chair Signature: ______________________
Date: 3 May 2011
Syllabus - PHYS 100
Survey of Physics (3 Credits)

Instructor: Prof. Paul Sherard
Office: Bldg 5: 102-F
Phone: 847-9862
Email: sherard@hawaii.edu

Course Material - Required
- Textbook: Physics 1st Ed., Ostdiek and Bord (2011) [with WebAssign access]
- Scientific Calculator: TI 30 or better

Catalog Description
An introductory course in physics for the non-science major, covering basic concepts and principles as related to everyday life, with emphasis on the interaction between society and physics—the most basic of all the sciences.

Articulation
The course fulfills a DY (Physical Sciences) requirement for AA degrees at HCC and UHM.

General Student Learning Outcomes
Upon the successful completion of PHYS 51, the student should be able to:
- Identify the relevant physics that applies to given physical situations
- Provide a qualitative explanation of how the relevant physics applies to the given physical situation
- Quantitatively apply the known physics to obtain solutions to real physical problems
- Demonstrate an understanding of the applicable physics by assessing the accuracy and correctness of all results

Subject Matter
Topics to be covered will include the following:
Force and motion, Newton’s laws, gravitation, momentum, work, energy, power, rotation, density, pressure, heat, waves, sound, electricity, circuits, magnetism, and atomic physics. Details of subject matter content will be identified in weekly assigned modules.

Course Tasks (what you will be graded on)
- Periodic in-class quizzes
- Homework - WebAssign
- Online activities - Laulima
- Semester Exams (3-4)
- Final Exam

Learning Resources
2. Laulima Web Site
3. WebAssign - Online Homework
4. Open office hours for consultation with instructor.

Accessing Material
1. Laulima: As a registered student, you can log into Laulima. Simply go to the Laulima log-in web site: https://laulima.hawaii.edu/portal
   Then log in using the same account name and password that you use with you UH email.
   There you will find the PHYS 100 site available to you.
2. WebAssign - Go to:
   https://www.webassign.net/login.html
   Instructions for registering for WebAssign can be found on Laulima.
Attendance

Attendance during class periods is necessary for an optimal learning experience. It is expected each person will make an effort to come to class on time prepared to participate. Interaction with others, respect for diverse opinions, responsible communication with others and constructive behavior are expected.

Lab (PHYS 100L)

The lab course PHYS 100L is a required co-requisite for this course. We will be doing a number of laboratory experiments this semester. Some of these labs will include computer-interface experiments that will introduce students to modern data taking techniques in a laboratory setting. The details of the lab portion of this course will be introduced during out first few laboratory sessions.

Grading

Your final grade in this course will be determined as follows:

Average of semester exams: 40%
Quizzes: 15%
Homework: 25%
Final Exam: 20%

Your course letter grade will be assigned as follows:
A 90-100
B 80-89
C 70-79
D 60-69
F < 60

'N' Grade: Contact instructor

If you drop out from the course without any notice you will get a 'F' grade. To avoid this, please be sure to withdraw officially by October 25, 2011.

Exams/Quizzes

Exams will be given on regular intervals during the semester. You can expect to encounter 3-4 exams during the semester. A comprehensive final exam will also be given at the end of the semester. Note: THERE ARE NO MAKEUP EXAMS! There will also be periodic quizzes. These quizzes will be based on problems taken directly from your homework assignments. These quizzes are given primarily to motivate you to keep up with the homework assignments. Students should not expect to do well on the exams unless they keep up with the homework.

Extra Credit

This is how I will handle any "extra credit": There will be no individual extra credit given. That is, a single student cannot do something that is not part of a class extra credit assignment. The types, if any, extra credit assignments will always be for the full class. Extra credit is always optional. That is, anyone can elect to participate or not.

Office hours

My office hours are as follows:
Monday 1:00 - 2:00 pm
Tuesday, Thursday 12:30 - 1:30 pm

Those are my official office hours, which means I will be at or near my desk during those times. You can also try to catch me in my office anytime. If my office hours conflict with your normal class schedule you can make an appointment with me at some other convenient time. If your having any difficulties in the course please do not hesitate to see me during my office hours.