APPLICATION: Dr. K. Gopalakrishnan

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COURSE ALPHA and NUMBER: OCN 201L

COURSE TITLE: Science of the Sea Laboratory

ESTIMATED NUMBER OF SECTIONS:
  Fall:  1
  Spring: 1

APPLICATION IS FOR:
  ☐ New Course  ☐ Modified Course  ☒ Existing Course  ☐ Re-designation
  ☐ Certification  ☒ Re-Certification. Date of last certification:

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

What percentage of the CONTENT of this course focuses on this diversification area? 80

What percentage of CLASS MEETINGS focuses on this diversification area? 80
1. **Hallmarks and SLOs.** Please explain how course-specific SLOs align with the diversification area’s hallmarks.

<table>
<thead>
<tr>
<th>DY 1. Uses the laboratory methods of the biological or physical sciences:</th>
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<tbody>
<tr>
<td>SLO 1. Understand metric units of measurement and conversion methods</td>
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<tr>
<td>SLO 2. Learn about skills in navigation marine chart preparation</td>
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<tr>
<td>SLO 3. Prepare and interpret marine bathymetric charts</td>
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<tr>
<td>SLO 5. Measure and plot temperature, salinity and nutrient distributions and interpret their influence on dynamic processes of the ocean</td>
</tr>
<tr>
<td>SLO 6. Learn about seawater chemistry through data collection and analysis</td>
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<tr>
<td>SLO 9. Study of ocean currents, waves and tides</td>
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Understanding the units of measurements, conversion and calculation to be used in a laboratory course is the first responsibility of students taking that course (SLO 1, SLO 2 and SLO 3). Methods used for demonstrating and actually performing the procedures vary depending on the topics in each discipline (geological, chemical physical and biological). Students are introduced to these procedures discipline-by-discipline (SLO 5, SLO 6 and SLO 9). Laboratory rules to be followed are discussed in order to ensure student safety and proper handling of tools and instruments.

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<th>DY 2. Involves processes and issues of design, testing, and measurement:</th>
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<tbody>
<tr>
<td>SLO 4. Understand tools used in the study of earth’s interior and seafloor.</td>
</tr>
<tr>
<td>SLO 7. Analysis of ocean sediments</td>
</tr>
<tr>
<td>SLO 8. Study of earth’s weather and climatic changes and ocean’s role in it</td>
</tr>
<tr>
<td>SLO 10. Learn about ocean’s geological resources (minerals) and biological resources (fisheries and aquaculture)</td>
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</tbody>
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The textbook prescribed for this course contains discrete exercises covering all 10 SLOs. After demonstration of each exercise/or experiment, students complete their tasks in the classroom and submit them at the end of each session for professors review and assessment. Shortcoming in their work will be pointed out for making needed corrections. With the use of audio-visual resources, students were introduced to tools and methods used to study the seafloor and the earth’s interior (SLO 4, SLO 7 and SLO 8). Students undertake in-situ hydrographic measurements during their scientific cruise in a research ship (SLO 5, SLO 6 and SLO 7). Information of oceans geological and biological resources is discussed to meet SLO 10. Audio-visual resources are also used to supplement discussion and lab exercises to meet SLO 10. Students also learn how to use compound dissecting microscopes to sort, identify, enumerate and take length measurements of microorganisms, as part of their exercises in biological oceanography that covers about 20% of the course materials.
DY 3. Demonstration of strengths and limitations of the scientific method:

Both time and resources will not permit students to make ocean as their real laboratory to test out hypothesis and take needed measurements. This class gets to go to sea only one time to conduct such experiments. The rest of the exercises are carried out in the classroom. However, the state-of-the-art technology and audio-visual resources in the classroom allow the professor to maximize student exposure to scientific methods practiced in ocean studies (SLO 4, SLO 8 and SLO 10). Easy-to-use oceanographic instruments enable students to carry out experiments and measurements in the lab without much difficulty (SLO 5 and SLO 6).

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.

Classroom discussion and quizzes allow the professor to evaluate student’s performance. In addition, each student is required to do a power point presentation, as part of his or her evaluation criteria. This independent activity allows students to demonstrate performance capability and it is earmarked as one of the assessment strategies for this course. Attendance is monitored in both the lab and field to assess student’s involvement in activities. Only one professor teaches this course that too one section per semester.

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.

Based on feedback from students, the format of lab exercises have been modified periodically. It was possible to offer this course at HCC only after resources became available, when the oceanography professor was successful in obtaining extra-mural fund to purchase needed instruments and audio-visual resources in support of this lab course. Lab facilities were up-graded to provide instruction, demonstrate experiments and for students to carry out exercises and experiments and to incorporate assessment findings from student inputs and evaluations. The contents of the course will be modified accordingly to introduce students to information about changes happening to oceans because of events such as ocean pollution, global warming, sea-level
fluctuations and over-fishing.
DIVERSIFICATION BOARD DECISION:

☑ Approved
Re-Certification Due: 6/30/17

☐ Not approved
If not approved, reasons for disapproval:

Diversification Board Chair Signature: ____________________________
Date: 24 Apr 2017
Course outline

Course: OCN 201-L (Science of the sea Laboratory) (DY)

Credits: 1

Professor: Dr. K. Gopal (Ph.D in Oceanography, Scripps Institution of Oceanography, University of California)

Course Description:

OCN 201L is designed as a lab course to provide experiential education in basic oceanography. Through lab experiments, computer-aided data collection and analysis, field trips and visual observations, students will learn about earth, ocean and atmospheric interactions, ecological concepts, ocean resource utilization and management, environmental pollution and its impact on world oceans. Lab exercises will compliment lectures in OCN 201 class.

Course Content: The class will carry out exercises in various oceanographic topics. Activities will include demonstration of oceanographic instrumentation, group discussion, conduct experiments, analyze and interpret data. Students will be required to prepare a reaction paper on oceanographic topics discussed or presented through audio-visual media. Students will also be required to prepare a PowerPoint presentation on a specific oceanographic topic.

Hours per week: 3 hrs per week

Pre- or co-requisite: OCN 201

Specific course objective and SLOS (Student Learning Outcomes)

This course will satisfy the diversification Laboratory requirement (DY) in Natural Science. Laboratory activities will compliment lectures in OCN 201.

SLOS include:
1. Understand metric units of measurements and conversion methods
2. Learn about skills in navigation marine chart preparation
3. Prepare and interpret marine bathymetric charts
4. Understand tools used in the study of earth’s interior and seafloor.
5. Measure and plot temperature, salinity and nutrient distributions and interpret their influence on biological processes in the ocean
6. Learn about seawater chemistry through data collection and analysis
7. Analysis of ocean sediments
8. Study of earth’s weather and climatic changes and ocean’s role in it
9. study of ocean currents, waves and tides
10. Learn about ocean’s geological resources (minerals) and biological resources (fisheries and aquaculture)

Evaluation and Grades:

Letter grades are determined on the basis of student performance in laboratory exercises, quizzes, timely submission of reaction papers; participation in field trip activities and a power point presentation on a specific topic in oceanography. The following break-down of cumulative scores: 90%-100% = A; 75%-89% = B; 60%-74% = C; 50%-59% = D and <40% = F.

If a student misses any exams, the score for that exam will be zero. Therefore, it is the responsibility of students to take the exams on scheduled date and time. Excuse for not taking an exam on the scheduled time will be given only for compelling reasons and will require written documentation such as a letter form your physician.

Updated: March 23, 2012