APPLICANT: Richard Brill

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COURSE ALPHA and NUMBER: Met 101

COURSE TITLE: Introduction to Meteorology

ESTIMATED NUMBER OF SECTIONS:
    Fall: 1
    Spring: 1

APPLICATION IS FOR:
    [ ] New Course  [ ] Modified Course  [x] Existing Course  [ ] Re-designation
    [ ] Certification  [ ] Re-Certification. Date of last certification:

DIVERSIFICATION AREA DESIGNATION SOUGHT:
    [ ] DA (Arts)  x  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?  100

What percentage of CLASS MEETINGS focuses on this diversification area?  100
Guidelines and explanatory notes for the following questions are located at the end of this document.

1. Hallmarks and SLOs. Please explain how course-specific SLOs align with the diversification area's hallmarks.

For ease of comparison the SLOs will be referred to by number in the explanations below. The SLOs as listed in the syllabus from the American Meteorological Association (AMS) are as follows:

1. Define and describe the structure and composition of Earth's atmosphere
2. Describe the behavior and measurement of heat and radiation, their distribution in the atmosphere and their relationship to the global heat budget
3. Demonstrate understanding of temperature and pressure in the context of real-world systems
4. Demonstrate understanding of the nature and variables of the global climate systems and its regulatory mechanisms
5. Describe the role and significance of water vapor in the atmosphere
6. Describe and define the processes of cloud formation and precipitation
7. Describe and illustrate the major weather systems and the associated movement of air on global, synoptic and local levels
8. Describe and illustrate the formation of jet streams and frontal systems
9. Demonstrate comprehension of the methods, goals, and problems of weather forecasting
10. Describe major world air masses and climates as they relate to the evidence and mechanisms of climatic change
11. Recognize the effects of weather and climate on agricultural, economic and political systems
12. Demonstrate critical and creative thinking skills to reach reasonable conclusions from diverse information.
13. Demonstrate understanding of the forms of scientific and numeric communication of the physical sciences
14. Demonstrate the ability to use the tools of science

A list of course topics is at the end of the syllabus. The topics focus specifically and 100% towards the SLOs.

DY.1 Use the terminology of the physical sciences;

Meteorology uses terminology from chemistry and physics but also some that is unique to atmospheric studies. For example:

SLO 1 requires the student to know the structure of the atmosphere and the names of the layers
SLO 2 requires description of descriptive terms relating to heat and radiation
SLO 3 requires use of terminology describing temperature and pressure including units
SLO 4 requires use of the terminology of global climate systems
SLO 6 uses terminology of aerosols and cloud names
SLO 7 names major weather systems on global, synoptic and local levels
SLO 8 requires the use of terms relating to jet streams and different types of frontal systems
SLO 10 requires the use of terms describing the major air masses and climates
SLO 11 requires using terminology to describe agricultural, economic and political systems

DY.2 Identify the knowledge and theories relating to processes in the physical sciences

SLO 2 requires knowledge of theories of heat and radiation and processes involving them
SLO 3 requires knowledge of theories of gas laws and the influence of temperature and pressure on parcels of gas
SLO 4 requires knowledge of theories of the global climate system
SLO 5 requires knowledge of how water changes phase at different temperatures
SLO 6 requires knowledge of theories of cloud formation and precipitation
SLO 7 requires knowledge of weather systems and the movement of air on global, synoptic, and local levels
SLO 8 requires understanding of the theories of jet stream formation

DY.3 Demonstrate an understanding that inquiry involves observation/experiment and reasoning and mathematics

SLO 9 requires understanding of the process of weather forecasting based on observation of weather data from widespread locations
SLO 12 exemplifies the intent of DY.3 by emphasizing both critical and creative thinking
SLO 13 requires understanding the forms and scientific and numeric communication
SLO 14 requires the use of all tools of science including observation, reasoning, calculation, experiment, modeling, and drawing conclusions

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.

Students take comprehensive exams that are specifically matched to the SLOs by item by the American Meteorological Association based on national standards. Students are presented with randomly chosen questions from each lesson on any given exam. Answers are sorted randomly as well. It is assured that no two students receive exactly the same set of questions.

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.

Assessment questions are item-analyzed and rewritten or discarded as needed. The current questions have all been tested over several semesters and appropriate revisions made.

Exams are item-analyzed after each administration and questions for which overall performance is poor are rewritten or discarded. Additionally new questions are added each semester and analyzed in subsequent semester. This dynamic process attempts to remove ambiguities in both questions and answers.

The instructor's knowledge of which topics have been the most difficult help to guide current students through the more esoteric parts of the course.
DIVERSIFICATION BOARD DECISION:

☑ Approved
Re-Certification Due: Fall 2012

☐ Not approved
If not approved, reasons for disapproval:

Diversification Board Chair Signature: [Signature]
Date: 10/28/12
METEOROLOGY 101
Introduction to Meteorology
Syllabus
Honolulu Community College

Richard Brill
Instructor
METEOROLOGY 101
Introduction to Meteorology
Honolulu Community College

Instructor: Richard Brill
Hours: online by appointment

Meteorology 101 studies the physical principles governing the behavior of Earth's atmosphere, describes the characteristics of major weather systems and forecasting, sun-Earth-ocean-atmosphere interactions, and the impacts of weather on man and vice-versa, with special emphasis on Hawaii. For non-science majors and prospective science teachers.

Successful completion of this course satisfies the physical science (DP) requirement for the natural science area requirement for University of Hawaii's General Education Core.

Meteorology is the study of the atmosphere of Earth. It includes the study of prediction and monitoring of weather and climate and their affects on man's activities, but also the physical laws and principles which affect the heating and motion of air and their distribution on Earth in the past, present and future.

The course examines the physical principles of the atmosphere as they relate to the explanation of the properties of the atmosphere; e.g., temperature, pressure and humidity distributions, atmospheric motions and cloud formation, descriptions of global wind and weather systems, applied meteorology to include forecasting and the role of meteorology in a number of environmental and economic concerns including the interaction of ocean and atmosphere and global climates and climate change.

Student Learning Outcomes
1. Define and describe the structure and composition of Earth's atmosphere
2. Describe the behavior and measurement of heat and radiation, their distribution in the atmosphere and their relationship to the global heat budget
3. Demonstrate understanding of temperature and pressure in the context of real-world systems
4. Demonstrate understanding of the nature and variables of the global climate systems and its regulatory mechanisms
5. Describe the role and significance of water vapor in the atmosphere
6. Describe and define the processes of cloud formation and precipitation
7. Describe and illustrate the major weather systems and the associated movement of air on global, synoptic and local levels
8. Describe and illustrate the formation of jet streams and frontal systems
9. Demonstrate comprehension of the methods, goals, and problems of weather forecasting
10. Describe major world air masses and climates as they relate to the evidence and mechanisms of climatic change
11. Recognize the effects of weather and climate on agricultural, economic and political systems
12. Demonstrate critical and creative thinking skills to reach reasonable conclusions from diverse information.
13. Demonstrate understanding of the forms of scientific and numeric communication of the physical sciences
14. Demonstrate the ability to use the tools of science

A schedule of topics is at the end of this syllabus.
TEXTBOOK AND REFERENCES
The textbook is *Climate Studies: Introduction to Climate Science* by Joseph M. Moran. Additional references: Schaum's outlines and elementary texts in physical science, physics, earth science, chemistry, astronomy are in library in the Q sections.

Method of Instruction
Instruction is in the form of individual study using the text and online activities in the form of real-time weather information available for some of the exercises. The URL for the course portal is: http://www2.honolulu.hawaii.edu/instruct/natsci/meteorology/brill/web/. More information regarding distance education can be found at the following link: http://honolulu.hawaii.edu/distance.

Students With Disabilities
Students in this class who need accommodations for a disability should submit documentation and requests to the Services for Students with Disabilities Office (SSD) in Bldg. 2, Rm. 108A. Phone: 845-9282 voice/text or 9272 voice/text for more information. If you have already registered your requests with SSD this semester, please see the instructor after class or during my office hours and be prepared to provide a current verification letter from SSD. (Rev. 3-29-2004)

Student Responsibilities
College courses require a significant amount of independent study. The material of this course will require more than merely reading the course materials, not just to memorize a set of facts but to understand, to make connections, to see relationships, to analyze information and to be able to write about them. It requires one to understand the facts and to know the vocabulary. As such, the following is required of the A-student in this course:
1. Think about the course material, its meaning and relationships. Observe it in the world around you.
2. Approach each lesson with the anticipation of discovery.
3. Organize the material in your mind as you read, and review it when necessary.
4. Study outside of class. Find additional reference materials, review online notes and compare them with the assigned reading.
ACADEMIC HONESTY
It is required of all students in this class to certify that you have read, understand, and agree to the following.

In order to be eligible for credit for this course all students must submit the following statement (with your name):

I __________________________ have read, understand, and agree to the conditions stated in the section of the University of Hawaii student conduct code pertaining to cheating and plagiarism.

Copy the above statement into an email with your name in the blank and send it to metweb@hcc.hawaii.edu

Everyone should be aware of University of Hawaii policy on dishonesty and plagiarism. The penalties can be severe, from getting an F grade to expulsion from the university.

Here is what the University of Hawaii student conduct code says about cheating and plagiarism:

"1. CHEATING includes, but is not limited to, giving or receiving unauthorized assistance during an examination; obtaining or distributing unauthorized information about an examination before it is given; using inappropriate or unallowable sources of information during an examination; falsifying data in experiments and other research; altering the record of any grade; altering answers after an examination has been submitted; falsifying any official University record; or misrepresenting the facts in order to obtain exemptions from course requirements.

2. PLAGIARISM includes, but is not limited to, submitting, in fulfillment of an academic requirement, any document that has been copied in whole or in part from another individual's work without attributing that borrowed portion to the individual; neglecting to identify as a quotation another's idea and particular phrasing that was not assimilated into the student's language and style or paraphrasing a passage so that the reader is misled as to the source; submitting the same written or oral material in more than one course without obtaining authorization from the instructors involved; or dry labbing, which includes obtaining and using experimental data and laboratory write-ups from other sections of the course or from previous terms or fabricating data to fit the desired or expected results."

If there is any part of this that you don't understand, please contact me to discuss it. If not then please return the certification statement as printed above.

You can download the entire code at http://honolulu.hawaii.edu/policies/conduct.html. As members of the University community we have an agreement to abide by this code.

Evaluation
Student assessment is in the form of chapter quizzes that consist of 25 multiple choice questions, Each quiz may be attempted two times at the Laulima website. There is no time limit once the quiz is begun. All quizzes will be open throughout the semester until the last day of classes as published in the schedule of courses. The quizzes may be taken in any order, but it is recommended to take them in sequence.

Chapters 1 – 12 will be graded for credit.
Eight of the twelve quizzes must be completed in order to secure a passing grade and credit for the course. Chapters 13-15 will be available for extra credit to those who complete all of Chapter 1-12 quizzes by the last day of class.

Grades will be determined on a point basis as follows:

<table>
<thead>
<tr>
<th>Chapter Quizzes</th>
<th>80%</th>
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<tbody>
<tr>
<td>Report</td>
<td>20%</td>
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Final grades will be determined from overall class performance. Typical cutoffs are:

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<tr>
<th></th>
<th>F</th>
<th>D</th>
<th>C</th>
<th>B</th>
<th>A</th>
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<tr>
<td></td>
<td>40</td>
<td>55</td>
<td>70</td>
<td>85</td>
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Course is self directed. Quizzes are available all term to be taken when chapter study is deemed adequate. Schedule is for guideline and tracking purposes only.

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
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<tbody>
<tr>
<td>1</td>
<td>Today’s Climate Science</td>
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<td>2</td>
<td>Monitoring Climate</td>
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<td>3</td>
<td>Earth’s Energy Budget</td>
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<td>4</td>
<td>Climate, Heat, and Temperature</td>
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<td>5</td>
<td>Global Water Cycle</td>
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<td>6</td>
<td>Global Atmospheric Circulation</td>
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<td>7</td>
<td>Regional Circulations</td>
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<td>8</td>
<td>Air/Sea Interactions</td>
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<tr>
<td>9</td>
<td>Paleoclimates</td>
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<tr>
<td>10</td>
<td>Climate Measurements</td>
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<tr>
<td>11</td>
<td>Natural Climate Change</td>
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<td>12</td>
<td>Anthropogenic Climate Change</td>
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<td>13</td>
<td>Climate Classification</td>
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<td>14</td>
<td>Responding to Climate Change</td>
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<tr>
<td>15</td>
<td>Climate Change and Public policy</td>
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