University of Hawaii Community Colleges  
Proposal to Initiate, Modify or Delete a Course

1. Type of Action
   - A. Addition
   - B. Deletion
   - C. Modification: □ in credits  □ in title  □ in prerequisites or co-requisites  □ in number or alpha  □ Other additional field activities, field trips and excursions (click to specify)

2. New Alpha, Number and Title  
   IS 160L: Polynesian Voyaging and Seamanship Lab

3. Credits 1 credit

4. Old Alpha, Number and Title
   SAME

5. New Catalog Description  
   Add: "Optional coastal and/or inter-island voyaging field trips may be offered. (Students will be responsible for fees for each activity.)"

6. Select box and type specific information in text box.
   - Prerequisites
   - Corequisites or Con-req.
   - Recommended Preparation
   - See attached sheet for swimming/health req.; co-req: concurrent enrollment in IS 160B.

7. Student Contact Hours Per Week
   - Lecture *
   - Lecture/Lab *
   - Lab 1.0
   - Other (click to specify)

8. Proposed Date of First Offering
   - Semester Fall Year 2002

10. This course □ is proposed for the * Program.  □ can fulfill Nat Sci: Other Sci If Other, specify Can also fulfill Arts & Humanities Group 2.

11. This course Makes No Difference in the number of credits required for the program/core.

12. Equivalent or similar courses offered in the UH System:

<table>
<thead>
<tr>
<th>Campus</th>
<th>Alpha, Number, Title</th>
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<th>Alpha, Number, Title</th>
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<tr>
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<td>HWST 281L: Ho'okele I Laboratory</td>
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<td>HWST 282: Ho'okele II: Hawaiian Navigation</td>
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<td>HWST 282L: Ho'okele II Laboratory</td>
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</table>

13. This course is (check one and click in appropriate textbox and provide details):
   - □ Already articulated with
     Provide details of existing or desired articulation (date, college(s), purposes, pre-major, etc.) in this space:

   - □ Appropriate for Articulation with
     Provide details of existing or desired articulation (date, colleges(s), purposes, pre-major or major, etc.) in this space:

   - □ Not yet appropriate for Articulation.

14. Reason for Initiating, Modifying or Deleting Courses or Other Pertinent Comment:
    Additional field trips/activities/excursions to outer islands and other coastal communities will be offered to the students as a recommendation, not a requirement. These activities will help to enhance the student's knowledge of their Hawaiian environment and help them to develop their sailing skills further.

Requested by:  
Approved by:  

Date: 1/27/02  
Date: 2/26/02  

CCCM #6100 (Amended for WCC use August 2001)
University of Hawaii Community Colleges
Proposal to Initiate, Modify or Delete a Course

Scott J. W. Smith Mar. 7, 2002

Faculty Senate Chairperson
Dean of Instruction
Provost

Date

3/19/02
03/17/02

CCCM #6100 (Amended for WCC use August 2001)
Proposal to Initiate, Modify or Delete a Course

Levels of Review of Course Proposal at Windward Community College

Signatures

<table>
<thead>
<tr>
<th>Department Area (more than one departmental instructor's signature required)</th>
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<tr>
<td>Joseph C. Critt</td>
<td>1-16-2002</td>
</tr>
<tr>
<td>Theres Whi</td>
<td>1/17/02</td>
</tr>
<tr>
<td>Helen Yee</td>
<td>1/17/02</td>
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</table>

| Department Chairperson      | 1/17/02        |

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<table>
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<th>Curriculum Committee Review</th>
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<th>Curriculum Committee Chairperson</th>
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<tr>
<td>Jean Shibuya</td>
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University of Hawaii Community Colleges
Proposal to Initiate, Modify or Delete a Course
Course Modification Form – Go to next page for Articulation Form

WCC Form for Course Modifications

Course IS 160L: Polynesian Voyaging and Seamanship Lab
Submitted by Joseph E. Ciotti
Date January 14, 2002

1. What change is proposed in the course? Provide specific information comparing both the “new” and “old” course.

Additional field trips, activities, and excursions will be offered to the students on a volunteer basis. These activities will be recommended but not required. These activities will help to enhance the students' knowledge of their Hawaiian environment and help them to develop their sailing skills further. These activities will include travelling to outer islands and to other coastal communities on the island that we live. These coastal and/or inter-island voyaging opportunities will be run in conjunction with the Hawaiian Sailing Canoe Association, an association dedicated to preserving and perpetuating the Hawaiian culture through Hawaiian sailing canoe activities (races and relays). Self organized voyages (organized by the course's instructors) will also be offered, however, these will not be of a racing or relay nature. These would be of a more exploratory and community service nature. For instance, helping a community rebuild a fishpond wall, or working in a 'lo'i.

The proposed change is the same as that for IS 260L: Polynesian Voyaging and Stewardship Lab. The additional recommended activities are of the same nature, but there is a difference in scheduling of events, due to seasonal concerns such as weather. There are some Fall events as well as Spring events, but the nature of the activity remains consistently the same.

2. What is the rationale for the change?

Voyaging outside of our training area provides a deeper sense of working knowledge and skill and offers incredible learning opportunities. These exercises promote healthy living and lifestyles while learning about our neighboring communities.

3. Is the change substantive enough to require a change in course identification? If so, explain thoroughly.

No.

4. Is the course articulated with any 4-year program? No

If yes, give details of the agreement(s) and explain any impact the proposed modifications may have on articulation.

5. Provide details of any additional staff, equipment, facilities, library/media material, faculty preparation and other financial considerations that would be required to implement this course modification. What has been done to provide for these additional costs? Who will teach the course? Is additional preparation needed?

The instructors who run the lab would be the same instructors who run these activities. There would be transportation costs, food costs, escort boat costs, race fee costs, and insurance costs. All costs

CCCM #6100 (Amended for WCC use August 2001)
Original dated WCC 9/91
University of Hawaii Community Colleges
Proposal to Initiate, Modify or Delete a Course
Course Modification Form – Go to next page for Articulation Form

would be covered by the participants, thus a recommended opportunity, not a required one. The liabilities will be covered by the American Canoe Association when participating with the Hawaiian Sailing Canoe Association's activities. However, there is no insurance coverage on the canoes and equipment. That would have to be solicited elsewhere. Corporate sponsorship would be ideal, but for now, we may have to use our existing funds from the college (Title III).

6. Will this course modification result in any alterations in the number of hours required to attain a certificate or degree? No

If yes, provide details and justification for these alterations.

7. If the course is renumbered to 100 or above, does it meet the criteria for transfer level courses? (Go to next page for transfer course criteria.) No
OUTLINE OF COURSE OBJECTIVES
Fall 2001

COURSE NAME: Polynesian Voyaging and Seamanship Lab

COURSE NUMBER: IS 160L

COURSE CREDITS: 1 credit

CATALOG DESCRIPTION: Laboratory/field trip course designed to acquire seamanship skills and apply knowledge of astronomy, geology, oceanography, meteorology, marine biology, ethnobotany and archaeology through sailing and environmental exploring activities. Optional coastal and/or inter-island voyaging field trips may be be offered. (Students will be responsible for fees for each activity.)

PREREQUISITES: 1. Minimum water skills and survival requirements: Pass the following water survival tests, which will be administered by the second lab:
   • ability to swim a minimum of 500 yards in the open ocean using any strokes
   • ability to tread water for 30 minutes in the open ocean

   2. Health clearance: a written statement must be signed by a medical physician certifying that the student is physically capable of participating in the sailing activities scheduled for the lab. Health clearance must be submitted by the date of the first sailing lab.

CO-REQUISITE: Concurrent enrollment in IS 160B: Polynesian Voyaging and Seamanship

ARTICULATION BY CAMPUS: WCC: students may choose to receive credit for either:
   Natural Sciences, Group 3 or
   Arts and Humanities, Group 2

REQUIRED TEXT/MATERIAL:
   • bound notebook for recording daily log entries

RECOMMENDED TEXT/MATERIAL:
   • reading lists/materials provided by individual instructors
   • tabis or other footgear suitable for reef walking
   • mask, snorkel and fins

ACTIVITIES REQUIRED AT TIMES OTHER THAN REGULAR CLASS TIMES:
   • see syllabus
ACTIVITIES REQUIRED OFF-CAMPUS DURING REGULAR CLASS TIMES:
- see syllabus

INSTRUCTORS:
Dr. Joseph Ciotti
Office: Imiloa 134
Office Phone: 235-7322
email: ciotti@hawaii.edu

Dr. Floyd McCoy
Office: Imiloa 115
Office Phone: 235-7497
email: fmccoy@hawaii.edu

Mr. Ka'au McKenney
Office:
email: kaaumckenney@hotmail.com

Office Hours: Schedule posted on office doors.
Effective Date: Fall 2001
IS 160L: Polynesian Voyaging and Seamanship Lab

SUPPLEMENTARY INFORMATION

A. Goals of the Course

This laboratory/field course supplements IS 160B with hands-on activities, excursions and seamanship skills which strive to blend the traditions of ancient Polynesian voyaging with present scientific knowledge. This approach attempts to instill in students skills valuable in contributing to a sustainable future for Hawai‘i's environment.

The goals of the course are:

1. To provide the student with the fundamental knowledge and concepts of the physical and biological world, especially as related to our Hawaiian environment.
2. To enhance student awareness in the human endeavor of exploration and voyaging by developing the basic skills of seamanship and navigation.
3. To provide the student with skills of scientific approaches to voyaging and seamanship, both ancient and modern.
4. To cultivate and enhance the student's ability to reason by applying the scientific method and by utilizing traditional voyaging and seamanship skills.
5. To promote greater student appreciation and awareness of the impact which human activities have on our local and global environment.

B. Objectives of the Course

Upon successful completion of this course, the student will be able to:

1. Apply both traditional Polynesian skills and modern scientific methods when engaged in sailing and environmental exploring activities.
2. Apply basic sailing and navigational skills to prepare and carry out a sail plan.
3. Increase swimming skills and water safety skills.
4. Conduct basic canoe operations, including rigging, sailing and canoe maintenance.

C. Expectations of Students

Success in this course will be enhanced by:

1. A positive, inquiring attitude towards learning.
2. Setting aside adequate time for studying and working problems.
3. Making notes and reading the suggested recommended literature.
4. Seeking assistance from the instructor(s).
5. Lab attendance and completion of assigned tasks.
6. Keeping abreast with or ahead of the syllabus.
D. Mode of Instruction

Laboratory Activity: Students are required to attend all lab sessions. The lab instructor(s) will give an overview of the theory and procedures related to the lab activity. The instructor(s) will be available throughout each lab session to assist and answer questions.

Co-Requisite Lecture Section: Students must be enrolled in IS 160B, which is the lecture counterpart to this laboratory course.

E. Method of Evaluation

Evaluation of the successful completion of the objectives of this course will be based on the following:

** Sailing (Attendance & participation + log book with 8 journal entries at 150 points.)
--10 points for 09/08/01 (9am-12noon): 5 points for attendance, 5 points for journal entry.
--20 points for each of the following dates that run from 9 am to 3 pm: 9/22, 10/6, 10/20, 11/3, 11/17, 12/1, 12/8. (10 points per 3 hour session--thus, can earn 10 points for attendance and 10 points for journal entry for each of those 6 hour days.) .......................................................................................................................... 150 points

** Final Examination A written final examination, worth 25 points, will be given. A lab practicum, which is of a hands-on nature, will also be given. For example, the students may be asked to conduct a knot test, a star/constellation/star compass identification test, and/or a canoe performance test. The lab practicum is worth 25 points ............... 50 points

TOTAL POINTS: 200 points

The lab will be graded based on attendance and participation. Each student will be responsible for turning in a journal at the conclusion of the semester. This journal should be a log of their learning and reflections with a minimum 1 page entry each session.

This class is based heavily on attendance. Please advise the instructors of any anticipated absences. More than 3 absences from the lab per semester and the student will fail the semester. Journals can be made up for these absences, with a reflection on a self-selected topic on Polynesian voyaging. However, points cannot be made up for missing class and being absent, but points can be made up for the journal entry for that day that was missed.
Classes may be modified and/or cancelled due to weather factors etc. Any changes to the schedule will be announced during class and lab. The student is responsible for keeping abreast with any changes in the syllabus which are announced in class and/or lab.

The lecture section is graded separately.

Each letter grade with its respective level of achievement is as follows:

<table>
<thead>
<tr>
<th>Letter Grade</th>
<th>Definition</th>
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<tbody>
<tr>
<td>A</td>
<td>90% - 100% of cumulative points possible</td>
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<tr>
<td>B</td>
<td>80% - 89% of cumulative points possible</td>
</tr>
<tr>
<td>C</td>
<td>70% - 79% of cumulative points possible</td>
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<tr>
<td>D</td>
<td>60% - 69% of cumulative points possible</td>
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<tr>
<td>F</td>
<td>below 60% of cumulative points possible</td>
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<tr>
<td>I</td>
<td>Incomplete: This temporary grade given at the instructor's option when a student has failed to complete a small part of a course because of circumstances beyond the student's control. All required work must be completed by the last day of instruction of the succeeding semester.</td>
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<tr>
<td>Cr</td>
<td>Achievement of objectives at the C level or higher.</td>
</tr>
<tr>
<td>NC</td>
<td>Achievement of objectives at less than C level. (Formal grade)</td>
</tr>
<tr>
<td>N</td>
<td>Achievement of objectives at less than C level. (Optional instructor's grade)</td>
</tr>
<tr>
<td>W</td>
<td>Official withdrawal after the third week of a 16-week course and prior to the end of the 10th week. If a student officially withdraws by the end of the 3rd week of a 16-week course, the record of registration in this course will not appear on the student's transcript.</td>
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</tbody>
</table>

F. Other Information

1. If a student is unable to attend a lab or field trip at the scheduled time, the student is responsible for notifying the instructor of the situation and reason(s).

2. A student can determine his/her current grade during any time of the semester by dividing his/her cumulative score by the cumulative points possible and converting into a percentage and referring to the table of Letter Grades.
3. Any student wishing to be informed of his/her semester grade in advance of the official mailing of report cards should provide the instructor a stamped, self-addressed postcard or envelope on the day of the Final Exam.
University of Hawaii - Windward  
Polynesian Voyaging Lab  
Student Responsibilities & Expectations

Expectations of Students:

1. Attendance and promptness.
2. Active participation.
3. A positive, inquiring attitude towards learning.
4. Making notes and reading the suggested recommended literature.
5. Seeking assistance from the instructor(s).
6. Responsibly obtaining all assignments and/or changes to the course syllabus.
7. Keeping abreast with or ahead of the syllabus.
8. Keeping a daily learning log for each lab attended.
9. Act as caretakers of the environment in which we learn and sail, especially including our canoe site.

Safety Issues & Lab Policies:

1. The swim test is mandatory and must be performed once every year.
2. A doctor's note certifying medical clearance to engage in sailing canoe activities is required by the date of the first sailing lab. This certificate is valid for one year.
3. NO ONE is permitted to jump off the canoe without the instructor's permission.
4. Obey the authority of the person in charge, this includes student Captains. However, the instructor has overriding authority over all student Captains.

Learning Log Guidelines & Objectives:

Log entries must include:

1. Daily entries for each class session, including a description of activities you participated in.
2. What you learned from your observations, experiments, or talks with teachers and classmates.
3. What you learned about the stars and other related celestial bodies, weather, ocean, reefs, fish.
4. What you learned about cultural practices related to voyaging and managing ocean resources.
5. Cultural and geographical knowledge of area of training and voyaging.
6. A written course evaluation (1-2 pages) summarizing what you learned from the class, and what you feel could be improved in the class for students who take the class in the future.

Log entries may include:

1. Maps marked with routes you took and places you visited during the class.
2. Sketches, diagrams and photos.

Dismissal from Lab:

Inappropriate student conduct is a serious matter which may pose a threat to the safety of other students in the class. Immediate disciplinary action will be taken in such cases. For example, a student may be asked to leave for the day for disruptive behavior. The instructor will issue a verbal warning for the first two (2) offenses. Upon the third (3rd) offense, the instructor will issue a written notice or warning to the student, the Voyaging Program Coordinator, and the Dean of Student Services. The Dean of Student Services will then conduct an investigation, which may lead to other disciplinary procedures (disciplinary hearings, temporary suspension, etc.).

The Next Level Beyond IS 260:

1. I.S. (Independent Studies) for variable credit (1-3 credits). This 3rd semester to our 1-year course/program involves mentorship to other students. Please see instructor for further information.
2. Coastal and/or inter-island voyaging opportunities together with organizations like the HSCA (Hawaiian Sailing Canoe Association), or self organized trips. Voyaging outside our training area provides a deeper sense of working knowledge and skill and offers incredible learning opportunities. These exercises promote healthy living and lifestyles while learning about our neighboring communities.
Criteria for the Next Level:

1. Must pass the swim test.
2. Medical clearance must be submitted. Displays a moderate level of physical conditioning. Any medical condition(s) MUST be reported to the instructors immediately.
3. Must attend all safety debriefings.
4. Displays a positive attitude toward learning and being a team player, participates actively, thus lab attendance is crucial.
5. Has demonstrated a satisfactory level of competence and general seamanship skills in the following areas: knot tying, sail planning, knowing the "hazards" while out at sea, sailing dynamics and windward ability, the physics of sailing, weather systems, waves, currents, tides, Hawaiian geography and Wayfinding.
6. Must possess the following base knowledge listed in the following attachment: What Students Must Know and Be Able to Do Before Voyaging Around O‘ahu Or Doing An Inter-Island Voyage with Windward Community College. Much of the information and knowledge can be drawn from the Polynesian Voyaging Society’s Crew Manual. Other sources are indicated.
What Students Must Know and Be Able to Do
Before Voyaging Around O'ahu
Or Doing An Inter-Island Voyage with
Windward Community College

{Much of this information can be found in the PVS Crew Manual on reserve at the WCC library. Other sources are indicated.}

Values & Crew Responsibilities:

- Discuss values for safe, successful, fun voyaging.
- Anticipate and discuss prevention of problems that might occur while sailing out at sea, and while camping and voyaging in a group.
- Know what the various crew positions are and know the Captain's and crew responsibilities.
- WCC rules for student activities and student conduct.
- Sign liability waiver.

Health & Safety:

- Importance of diet for good health and how to plan a healthy balanced meal. (See Leimomi for hand-outs.)
- Importance of regular exercise for good health.
- Minimum requirements: swim 500 yards and stay afloat for half an hour in deep water (swim test), medical clearance form submitted, and a knot test.
- Desirable requirements: experience paddling a canoe, sheeting experience, steering experience, and basic First Aid.
- Seasickness -- causes, prevention and remedies.
- Sunburn -- short and long term effects of sun on the skin; how to protect skin from sun.

Boating Safety:

- USCG required equipment and how to use the equipment (See USCG publication: Federal Requirements and Safety Tips for Recreational Boats; DLNR publication: Hawaii Boating Basics: A Guide to Responsible Boating; Captain should be familiar with Federal and State requirements for boating).
- Emergency procedures at sea – personal injuries, man overboard, swamping, running aground, collision – how to prevent them, what to do if they happen.

**Cultural Background:**

- History of Polynesian migration – who, when, where, how, why?
- History of the revival of voyaging in Hawaii (Polynesian Voyaging Society).
- Stories of voyaging, Hawaiian and Polynesian, from oral traditions (ie. Kaha’i, Mo’ikeha, Pa’ai, Paka’a, etc.; see *Voyaging Chiefs of Hawaii* by Dennis Kawaharada; *The Wind Gourd of La’amaomao*).
- The stories of Niu.
- The stories of Papa and Wakea.
- The stories of Maui.
- Know the moku of O’ahu (*Sites of O’ahu* by Sterlings and Summers).
- Know the ahupua’a of Ko’olaupoko (*Sites of O’ahu* by Sterlings and Summers).
- Protocol for arriving and departing from a community; Gifting.
- Chants: E Ho Mai, E’ala E.

**Geography:**

- How to read a nautical chart.
- Kane’ohe Bay: reefs, channels, depths, landmarks.
- Coastline of O’ahu (and other islands if going inter-island): reefs, bays, offshore underwater topography, depths.
- Harbors, channels and anchorages of O’ahu, as well as State-Wide if going inter-island.
- Major landforms: mountain ranges, peaks, craters, plains, ridges, valleys, streams.

**Oceanography:**

- Direction of surface currents around O’ahu and the Hawaiian islands -- how currents are generated, seasonal changes.
- Directions of ocean swells -- how swells are generated, seasonal changes.
- Waves -- how they form and break, differences between deep water and shallow water waves.
- Tides -- what causes them, relationship to moon phases, high and low tides for the period of the voyage.

**Meteorology:**

- Various weather systems (ie. high and low pressure systems).
- Seasonal weather patterns in Hawaii and what causes the seasonal changes.
- How winds are generated.
- Trade winds and cold fronts.
- Land and sea breezes.
- How land forms (ie. mountains, valleys) affect wind.
- Hurricanes
- Types of clouds and what kinds of weather they indicate.
- Squalls -- how they develop and why they are dangerous.
- How to estimate wind speed and direction.
- How to prepare a daily weather forecast, based on information gathered from NOAA reports (marine forecast, buoy and land station wind and sea reports).
- How to read a meteorological chart.

**Marine Biology:**

- Seabirds and their habits; how they are used in navigation.
- Fish of the reef and open ocean.
- Fishing from the canoe and from shore.
- Modern fishing regulations for conservation
- Edible marine plants; how to gather them.
- Marine mammals (whales and dolphins) and their habits.
- Dangerous marine animals; how to treat bites and stings.
- Myths about sharks.
- Hawaiian traditions about sharks.
- Endangered and protected sea animals.
- Reef and open ocean habitats - what affects them, how to maintain their health, how not to damage them while boating.
- Water quality – how to measure it, what affects it, how to keep the oceans clean and healthy.
The Canoe:

- Canoe building traditions in Hawaii.
- Canoe design, parts, and rigging.
- How to tie knots (bowline, in-line or running bowline, clove hitch, square knot, half-hitch).
- How wind drives a canoe forward.
- Sail shape and efficiency – how to get the most out of sails, physics of sailing.
- Physics of steering a canoe.
- Center of effort and pivot point.
- Weather helm and lee helm; balance.
- Windward ability.
- Tacking and jibing.
- Estimating the speed of the canoe.
- Leeway, lee drift.
- How to approach and leave a dock or mooring in various wind conditions (cleating the bow and stern lines at a dock); approaching/landing and leaving a beach/shore.
- How to anchor a vessel.

Sail Planning:

- How to plot a course and make a sail plan.
- How to enter and leave harbors or anchorages; State rules and regulations.
- Correcting for currents.

Naked-Eye Astronomy and Navigation:

- Steering by landmarks.
- Steering by the wind and swells.
- Steering by the rising and setting points of celestial bodies.
- Star compass – directional houses.
- Rising and setting points of the sun for the period of the voyage.
- Rising and setting points of the moon/moon phases for the period of the voyage.
- Identifying major stars, constellations, and planets.
- The 21 brightest stars, and their rising and setting points.
• The planets for the period of the voyage, and their rising and setting points.
• Pairs of stars that point to the north and to the south.
• Circumpolar stars in Hawaii.
• Navigational aids in channels and harbors.
• Right of way.
• GPS and other modern aids to navigation.
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<th>MONDAY</th>
<th>WEDNESDAY</th>
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<tr>
<td>AUG</td>
<td>27 A: Introduction; Logistics</td>
<td>29 A: Celestial Sphere, Coordinate Systems, Navigator's Compass (Imiloa 133)</td>
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<td>SEP</td>
<td>3 LABOR DAY</td>
<td>5 A: Polynesian Cosmogony &amp; Cosmology Star Maps (Imiloa 133)</td>
<td>8 Lab 9-12 Introduction Lab Objectives (Kualoa Beach Park)</td>
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<tr>
<td></td>
<td>A: Manaiakaniani &amp; Ka Lupe o Kawelo (Imiloa 133) Quiz A-1 (20 pts)</td>
<td>12 A: Constellation ID (Hokulani Imaginaria)</td>
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<td>17 G: Climate &amp; Atmospheric Circulation (Imiloa 117)</td>
<td>19 G: Climate &amp; Oceanic Temperatures/ Salinity/Density (Imiloa 117)</td>
<td>22 Lab 9am—3pm Drydock Swim Test (WCC)</td>
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<td>OCT</td>
<td>1 G: Island Wakes, Lagoonal &amp; Lacustrine Circulation (Imiloa 117)</td>
<td>3 G: Review Oceanography Quiz G-1 (20 pts) (Imiloa 117)</td>
<td>6 Lab 9am—3pm Drydock (WCC)</td>
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<td>8 H: (Imiloa 133)</td>
<td>10 H: (Imiloa 133)</td>
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<td>15 H: (Imiloa 133)</td>
<td>17 H: (Imiloa 133)</td>
<td>20 Lab 9am—3pm Sailing (Kualoa)</td>
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### IS160A/B & L Fall 2001

**A:** Astronomy  **G:** Geosciences (Atmosphere/Oceanography)  **H:** Hawaiian Studies

<table>
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<tr>
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<th>MONDAY</th>
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<td>Voyager II program</td>
<td>Constellation ID</td>
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<td><em>(Imiloa 133)</em></td>
<td><em>(Hokulani Imaginarium)</em></td>
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<td>29</td>
<td>A</td>
<td>31</td>
<td>3 Lab 9am–3pm</td>
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<td>Horizon Coordinates</td>
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<td></td>
<td>&amp; Movement of Sun</td>
<td>Causes of seasons &amp;</td>
<td><em>(Kualoa)</em></td>
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<td></td>
<td><em>(Imiloa 133)</em></td>
<td>latitude variations</td>
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<td><em>(Imiloa 133)</em></td>
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<td>Scientific proof of</td>
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<td>earth's size&amp;shape</td>
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<td>rotation &amp; revolution</td>
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<td>Quiz A-2 (20 pts)</td>
<td><em>(Imiloa 133)</em></td>
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<td><strong>Veterans Day</strong></td>
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<td><em>(Imiloa 133)</em></td>
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<td><em>(Imiloa 133)</em></td>
<td><em>(Kualoa)</em></td>
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<td>19</td>
<td>H</td>
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<td><em>(Imiloa 133)</em></td>
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<td><strong>THANKSGIVING</strong></td>
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<td><em>(Imiloa 133)</em></td>
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<td><em>(Imiloa 133)</em></td>
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<td>Waves</td>
<td><em>(Kualoa)</em></td>
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<td>G</td>
<td>5</td>
<td>8 Lab 9am–3pm</td>
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<td>Waves</td>
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<td><em>(Imiloa 117)</em></td>
<td>Waves</td>
<td><em>(Kualoa)</em></td>
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<td>G</td>
<td>12</td>
<td>MON, Dec 17</td>
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<td>Global Warming &amp;</td>
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<td><strong>FINAL EXAM</strong></td>
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<td>Law of the Sea</td>
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<td><em>(Imiloa 117)</em></td>
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