



UNIVERSITY OF HAWAII'Ī AT HILO

2015 MARINE SCIENCE



UNIVERSITY
of HAWAII®
HILO



A diver in a black wetsuit and blue fins is swimming over a large, textured coral reef. Two yellow and black butterflyfish are swimming above the diver. The background is a clear blue ocean.

Marine Science

on the Big Island of Hawai'i

The Marine Science program at the University of Hawai'i at Hilo is designed to take full advantage of the "Big Island" of Hawai'i's variety of marine environments ranging from deep ocean to coral reef to estuary. An exciting array of ocean activities is planned. These activities are designed to stimulate the student's interest, provide experience-oriented learning and take full advantage of the island's exotic offerings.

The Island of Hawai'i is a treasure of unique diversity. With its sometimes snow-capped mountain peaks, pasture lands, lush tropical rain forests, rainbow-arched valleys, and active volcanoes, the Big Island has been described as a tropical mini-continent. An internationally renowned site for astronomical observation the island is also home of the world-famous Hawaiian Volcanoes Observatory. The island boasts beaches of black, white or green sand providing uncrowded access to pristine waters. Scientists and visitors alike are afforded the possibility of observing glowing red lava flowing into the sea from coastal vents. The Big Island is twice the size of all the other Hawaiian Islands put together and unsurpassed in beauty by any other island in the Hawaiian chain. From its people who carry with them the "Aloha" to the richness of its lands, the Big Island of Hawai'i is the perfect place to spend the summer learning about the wonders of the sea.

The University of Hawai'i at Hilo, fully accredited by the Western Association of Schools and Colleges, is a part of the Hawai'i system of higher education. Its programs emphasize accessibility to facilities and instructors in a small campus atmosphere. Teaching is a priority concern of all UH Hilo Faculty. Professors are encouraged to involve students in their own research and publications; as a result, UH Hilo students do very well in graduate school. UH Hilo Marine Science Faculty also taps into the rich cultural heritage and environmental resources of the Big Island in such programs as the Marine Science Department, the Marine Option Program, and the Marine Science Summer Program.

Combining an ideal environment, excellent curriculum, outstanding instructors, its own new laboratory and classroom building, and research/teaching vessel, the UH Hilo Summer Marine Science Program is one of the best opportunities in the nation for undergraduates to study marine science. In recognition of this exceptional summer program the UH Hilo Summer Marine Science Program has received an "Award for Excellence of Program" from the Western Association of Summer School Administrators, an organization representing over 80 member universities in the western U.S., Canada, and Mexico..

Summer 2015 Marine Science Course Offerings

Courses with Special Schedules, May 17-30, 2015

CRN	CR	Course	SEC	Title	Days	Times	Location	Instructor
12435	3	MARE 264	001	QUEST	UMTWRFS	8:00a-10:00p	Ke'ei	L. Parr
12436	3	MARE 364	001	adv QUEST	UMTWRFS	8:00a-10:00p	Ke'ei	L. Parr

Summer Session I: May 26-June 19, 2015

12377	3	MARE 194	001	SpTop: Natural History of the Kona/Kohala Coast	TBA	TBA	TBA	J. Beets
12391	3	MARE 240	001	Small Boats Operations	TR	1:00p-5:00p	MSB 104	Staff

Summer Session II: June 22-July 31, 2015

12345	3	MARE 110	001	Current Issues in Marine Science	Online		WWW	L. Muehlstein
12403	3	MARE 140	001	Intro to Hawaiian Coral Reefs	MTRF	10:00a-11:45a	MSB 101	J. Sims
12404	1	MARE 140L	001	Intro to Hawaiian Coral Reefs Lab	W	1:00p-5:00p	MSB 104	J. Sims
12405	3	MARE 171	001	Marine Biology - Diversity	MTRF	8:00a-9:45a	MSB 104	J. Sims
12398	3	MARE 250	001	Statistics	TR	1:00p-5:00p	MSB 103	J. Turner
12401	3	MARE 380	001	Sharks and Rays	MTRF	8:00a-9:50a	MSB 103	J. Turner
12402	1	MARE 380L	001	Sharks and Rays Lab	F	6:00p-10:00p	MSB 104	J. Turner
12399	3	MARE 390	001	Marine Mammals	MTRF	10:00a-11:50a	MSB 103	J. Turner
12400	1	MARE 390L	001	Marine Mammals Lab	W	8:00a-12:00p	MSB 104	J. Turner



Summer 2015

Marine Science Course Descriptions

MARE 110, Current Issues in Marine Science, 3 credits

Introduction to marine science via the controversies and problems facing our ocean environment. Topics may include coastal population growth, sonar, fisheries, dolphin-safe tuna, cruise ship waste, global warming, mercury in fish, beach erosion, alien species, and coral reef decline. Designed for non-majors. This course applies toward general education requirements in the Natural Sciences.

MARE 140, Intro to Hawaiian Coral Reefs, 3 credits

Explore the underwater world of the Big Island of Hawai'i while learning about unique marine ecosystems found nowhere else on Earth. Students will acquire an appreciation for local aquatic fauna in the classroom including the basics of marine biology and natural history. Pre: concurrent enrollment in MARE 140L required. (GenEd/IntReq: H/A/P, HPP)

MARE 140L, Intro to Hawaiian Coral Reefs Lab, 1 credit (lab)

Students will enter the natural laboratory that is Hawai'i and investigate coral reefs, coastal beaches and tide pool systems with mask, snorkel and fins. Learn to identify common marine inhabitants while enjoying an unparalleled educational experience under the sea. Concurrent enrollment in MARE 140 is required. (GenEd/IntReq: H/A/P, HPP) \$250 lab fee is payable upon registration.

MARE 171, Marine Biology-Diversity, 3 credits

Marine organisms: classification, structure, physiology, ecology and adaptations to the marine environment. This course satisfies College of Arts and Sciences General Education Natural Science requirement.

MARE 194, Special Topic: Natural History of the Kona/Kohala Coast, 3 credits

The course provides an introduction to the Natural History of organisms and ecosystems found on the Kona/Kohala Coast. The course will be taught in West Hawaii. It is primarily a field course with background information occasionally provided in a classroom setting. Students will be walking in coastal environments, identifying common organisms, learning their life history, and

recording information on coastal organisms, their habitats, and their role in their ecosystems. Students should be able to walk and wade in rough and sunny coastal conditions.

MARE 240, Small Boat Operations/Research, 3 credits (lecture, lab)

This course is intended to provide the novice boater with skills needed to safely operate and conduct research from a small boat. Topics include: state and federal regulations, safety, navigation, small boat handling, and conducting research operations. The course will consist of lectures, lab sessions, and time on the water in a small boat. Participants must be able to swim. Pre: Instructor's consent. \$250 lab fee is payable upon registration.

MARE 250, Statistical Apps in Marine Science, 3 credits

Hands-on approach to designing field experiments, collection of ecological data, analysis of data on computers using statistical methods, and presentation of results. Requires completion of a project using data collected in the field followed by the preparation of both written and oral reports. Pre: MARE/BIOL 171 or MARE 201, or instructor's consent.

MARE 264, Quantitative Underwater Ecological Surveying Techniques (QUEST), 3 credits

The application of commonly utilized nearshore underwater ecological surveying techniques using SCUBA. Intensive two-week course combining lecture and field work. Data will be collected in the field, reduced, analyzed and presented in an oral report. Pre: Authorization as a scientific diver in training before start of course and instructor's consent. \$700 lab fee is payable upon registration.

MARE 364, Advanced QUEST, 3 credits

Students lead a dive team learning underwater ecological surveying techniques; supervise field data collection, data reduction and analysis, and team presentation of written and oral reports; and assist in training students in identification of marine organisms. Pre: BIOL/MARE 264, authorization as a scientific diver in training before start of course, and instructor's consent. Student receives CR/NC for the course. \$250 lab fee is payable upon registration. \$700 lab fee is payable upon registration.

MARE 380, Natural History of Sharks and Rays, 3 credits

This course will examine the natural history of the Elasmobranchs, an ancient group of fishes that have existed for almost 450 million years. Comprehensive investigations of sharks, rays, skates, sawfishes, and chimera, along with representative species from Hawai'i, will be conducted. Subjects will include evolution, taxonomy, anatomy, physiology, ecology, conservation and management of these unique animals. Discussions of current research papers along with group research projects will be covered during lectures. Pre: MARE 171 or instructor's consent.

MARE 380L, Natural History of Sharks Lab, 1 credit (lab)

This course will further examine Elasmobranchs using a hands-on approach to compliment the work done in Lecture using both laboratory and field-based activities. Laboratory sessions will involve detailed dissections of shark, ray, skate, and chimera functional anatomy. Students will also participate in a tagging study of coastal shark species throughout the Big Island of Hawai'i. Pre: Concurrent enrollment in MARE 380. \$250 lab fee is payable upon registration.

Please contact individual course instructors directly with questions, or general questions can be addressed to the Marine Science Chair, Jason Adolf jadolf@hawaii.edu.

Sample Schedules provided as guidance only and do not represent classes that have to be taken together

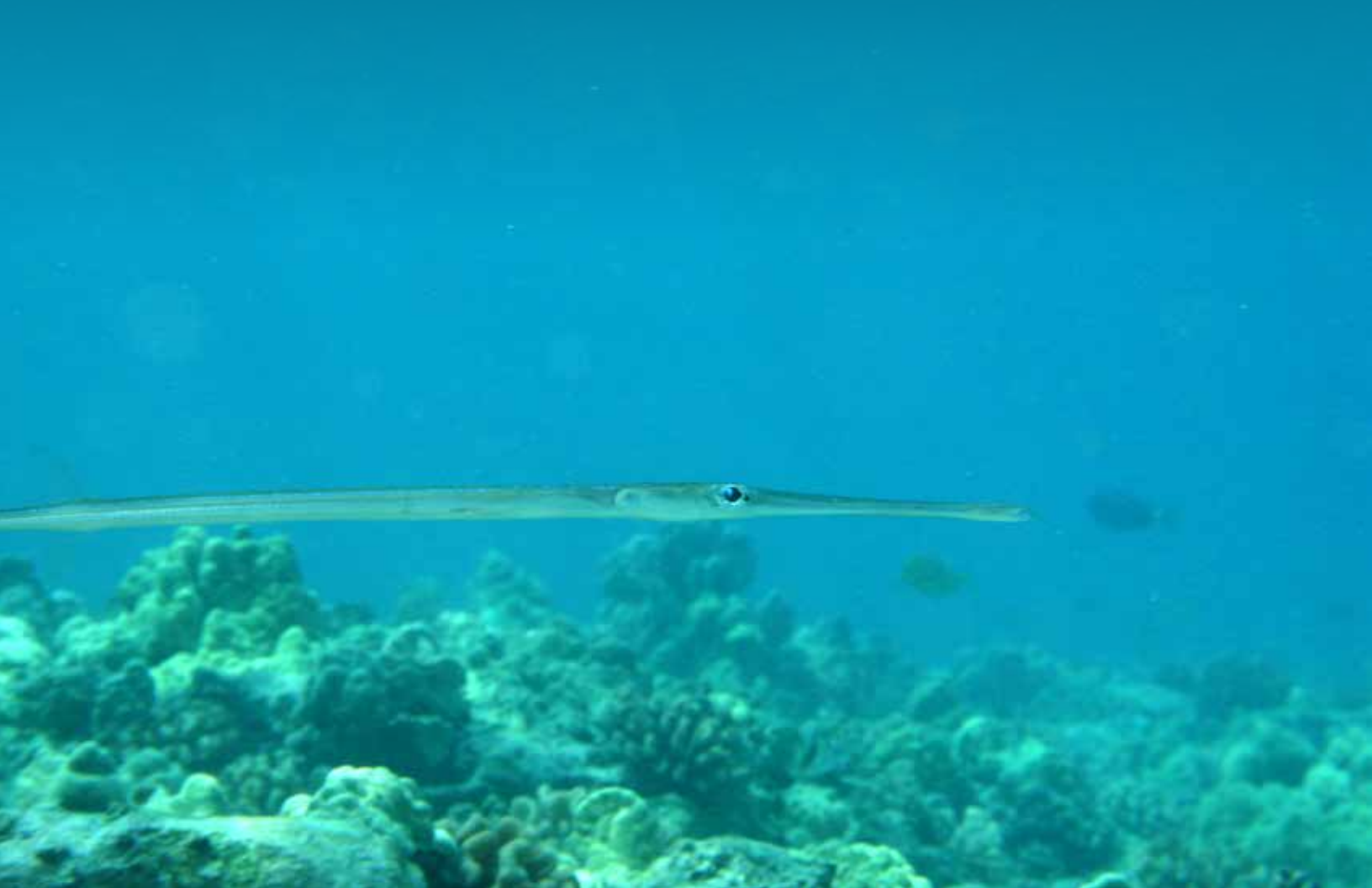
Summer session students should take no more than eight or nine credit hours of course work, not counting QUEST.

MARE 390, Biology of Marine Mammals, 3 credits

Comprehensive investigation of a diverse group of highly adapted marine vertebrates. Whales, dolphins, porpoises, seals, sea lions, walruses, manatees, dugongs, sea otters and polar bears will be covered. Focus will be on taxonomy, anatomy and physiology, behavior, reproductive ecology, adaptations to the marine environment, and conservation and management. Pre: MARE 171 or instructor's consent.

MARE 390L, Biology of Marine Mammals Lab, 1 credit (lab)

Field and lab techniques employed by professional marine mammal biologists including shore and boat-based surveys, photo-identification, and acoustic sampling. Investigations will focus on local species of marine mammals. Pre: MARE 390 or concurrent enrollment. \$250 lab fee is payable upon registration.



SUMMER SESSION IN MARINE SCIENCE

Sample Schedule

Summer session students should take no more than eight or nine credit hours of course work, not counting QUEST.

Sample courses loads are shown below:

Example A - Introductory Courses - Marine Biology Focus

- | | |
|--|-----------|
| 1) Marine Biology (MARE 171) | 3 credits |
| 2) Intro to Hawaiian Coral Reefs (MARE 140) | 3 credits |
| 3) Intro to Hawaiian Coral Reefs Lab (MARE 140L) | 1 credit |

Total = 7 credit hours

Example B - Introductory Courses - Oceanography Focus

- | | |
|---|-----------|
| 1) Marine Science Lab (MARE 110) | 3 credits |
| 2) Small Boat Operation in Marine Research (MARE 240) | 3 credits |

Total = 6 credit hours

Example C - Advanced Courses - Research Focus

- | | |
|---|-----------|
| 1) Tropical Marine Research Investigations (MARE 366) | 3 credits |
| 2) Special Topic: SEM Elem Analysis (MARE 294/L) | 4 credits |

Total = 7 credit hours

Example D - Advanced Courses - Marine Biology Focus

- | | |
|---|-----------|
| 1) Natural History of Sharks and Rays (MARE 394) | 3 credits |
| 2) Natural History of Sharks and Rays Lab (MARE 394L) | 1 credit |
| 3) Marine Mammals (MARE 380) | 3 credits |
| 4) Marine Mammals lab (MARE 380L) | 1 credit |

Total = 8 credit hours



Faculty

The UH Hilo Summer Marine Science faculty exemplifies the best in national educators

Dr. Jason Adolf, Associate Professor of Marine Science at UH Hilo, is a phytoplankton ecologist who has worked in Chesapeake Bay, the Mid-Atlantic Bight, Southwestern Australia and the U.K. His current research on the phytoplankton dynamics in coastal waters of Hawai'i Island uses real time continuous monitoring buoys and high-speed surface mapping of water quality, in addition to traditional techniques, to investigate the natural and anthropogenic forces shaping coastal phytoplankton populations. Dr. Adolf strongly believes that hands-on learning is critical to science education and his classes reflect that philosophy. <jadolf@hawaii.edu>

Dr. James Beets, Professor of Marine Science at UH-Hilo, is a benthic ecologist who has worked for several decades on Pacific and Caribbean coral reefs. He has conducted fisheries research and fish ecology investigations throughout the tropics and has assisted agencies in the development of monitoring programs. A focus of his research has been the investigation of human effects on coastal environments, and particularly, impacts on coral reefs. Dr. Beets has a passion for teaching natural history of marine organisms and the ecology of marine ecosystems. beets@hawaii.edu

Dr. Lisa Muehlstein is a marine scientist in the UH Hilo Department of Marine Science. She has extensive experience teaching a diversity of lecture, field and online courses for both undergraduate and graduate students. Dr. Muehlstein received her Ph.D from University of Georgia with research interests in microbial interactions of seagrasses and algae in the Caribbean, the Pacific Northwest and Hawai'i. Dr. Muehlstein is currently working on a coral health project in West Hawai'i. <lm@hawaii.edu>

Ms. Lisa Parr** holds a Bachelor's Degree in Biology with an Emphasis in Oceanography from CSU Humboldt, and a Master's Degree in Environmental Studies from the University of Tasmania, Australia, with a focus on shorebirds and Antarctic seabirds. As an Instructor in the Marine Science Department, as well as Site Coordinator for the UH Hilo Marine Option Program and QUEST program, her teaching philosophy is predicated on Applied and Experiential Learning, which is central to many of her classes, including upper division courses in teaching marine science and curriculum design, and Senior Internship. She received an ALEX award for Excellence in Teaching in 2014-15. lparr@hawaii.edu

Ms. Jennifer Sims is a broadly trained biologist working at UH Hilo in the Departments of Marine Science and Biology. She has been working in biological research and academics for the past 14 years, with a Bachelor's Degree in Marine Biology and a Master's Degree in Environmental Biology. Jennifer has been involved in a wide variety of research programs including medical research, shrimp mariculture, molecular and population genetics, and marine mammal biology. <turnerjs@hawaii.edu>

Dr. Jason Turner**, Associate Professor of Marine Science at UH Hilo, is a marine biologist who has conducted research on marine mammal biology, sea turtle ecology, connectivity of aquatic food webs and feeding studies in larval and juvenile fishes, and has conducted fisheries surveys throughout the Gulf of Mexico. Dr. Turner has published research results in scientific papers in marine biology, marine ecology, and marine mammal journals. <jpturner@hawaii.edu>

Website - <http://www.foodweb.uhh.hawaii.edu/>
QUEST FACULTY and STAFF

Ms. Lisa Parr** - QUEST Coordinator, 364 Instructor

Mr. Jeff Kuwabara - QUEST Co-Coordinator, Faculty Diver, Photographic sampling techniques leader

Mr. Matt Connelly - QUEST Logistics Coordinator

Ms. B.K. Griesemer* - QUEST Beachmaster

Mr. Mauritius Bell - QUEST Staff Diver, Lead Dive Safety Officer

Ms. Donna Brown - QUEST Staff Diver, Assistant Dive Safety Officer

Mr. John Burns - QUEST Faculty Diver, Coral reef ecology leader

Ms. Emily Kelly - QUEST Faculty Diver, Marine algae (limu) leader

Dr. Anuschka Faucci - QUEST Faculty Diver, Invertebrate zoology leader

Ms. Cori Kane - QUEST Faculty Diver, Fish ecology leader

*Recipient of the University of Hawai'i Board of Regents Medal for Excellence in Teaching.

**Recipient of the University of Hawai'i Frances David Award for Excellence in Teaching.



Registration Information

Application and Registration Process

1. Submit application, www.hilo.hawaii.edu/studentaffairs/admissions/. Academic transcripts are not required. Once your application is received and your information is entered into the student database, you will be notified by mail.
2. Upon notification of completion of the application (generally 3-4 days), obtain a UH username and password, <https://myuh.hawaii.edu/cp/home/displaylogin> (or go to <http://hilo.hawaii.edu>, click on MyUH).
3. Official web registration begins at 8:00 a.m. on April 1, Hawai'i Standard Time.

Need assistance? For questions on the application process, call the Admissions Office at (808) 932-7446 or toll-free at 1-800-897-4456, or email uhhadm@hawaii.edu. For questions regarding login or password, contact the UH ITS Help Desk at help@hawaii.edu or call (808) 956-8883 or toll free from the neighbor islands at 1-800-558-2669, Monday-Thursday from 8:00 a.m.-9:30 p.m. and Friday from 8:00 a.m.-4:30 p.m.

Transfer Credits

If you are currently enrolled at another college or university and intend to transfer credits from UH Hilo to your home institution, you are encouraged to secure advance approval of your UH Hilo course selections from your home institution. Even though courses at UH Hilo are fully accredited and are generally accepted for transfer credit, decisions on transferability rest with the receiving college or university.

Grade Reports

You may access your grade results through MyUHPortal. A paper copy will not be sent to you. You may obtain an official transcript of your academic record by filing a written request at the Business Office. A fee of \$5 is charged in advance for each transcript requested. For complete information, go to <http://hilo.hawaii.edu/registrar/transcripts.php>

Tuition and Fees

Tuition and fees for the 2015 Summer Session are:

Resident Tuition	\$277 per credit
Non-resident Tuition	\$380 per credit*
Graduate Tuition	\$551 per credit (regardless of residency)

Student Life Center fee: \$ 35

*For Summer 2015, the Board of Regents has approved a special rate for the Western Undergraduate Exchange (WUE) and for Pacific Island students. The rate is \$328.50 for those students who have the completed paperwork.

Tuition and Fee Payments

- MyUH Online: Pay by MasterCard, VISA, or any credit card accepted by the Discover Network (Discover, Diners, and JCB) pinless debit card or web check (checking or savings account). Registered students may sign up for an installment payment plan for the fall and spring terms. Log on to MyUH for more details. The payment plan is not available during the summer terms.
- Mail: Make checks payable to "University of Hawai'i at Hilo" and mail to: UH Hilo Cashier's Office, 200 W. Kawili St., Hilo, HI 96720. Mail payments must be RECEIVED by the appropriate payment deadline. You should allow a minimum of 5 days for delivery prior to the deadline. Do not use Campus Mail. To ensure proper crediting to your account, write your UH number on the bottom left corner of the check.
- In Person: Pay by cash, check, money order, or cashier's check at any campus business office.
- Parents and Other Authorized Users: If you have been set up as an Authorized User, you may logon to the Authorized User site with your email address and password provided to you.

Housing

<http://hilo.hawaii.edu/housing/>
Email: uhhouse@hawaii.edu
Phone: (808) 932-7403

Meal Plan

<http://uhcampusdining.com/>
Phone: (808) 932-7352

Shuttle Service

The campus is approximately three miles from the ocean and the closest mall. There are convenience stores nearby. ISP offers a limited shuttle service between the campus, the mall, and the Richardson Ocean Center. If you would like increased mobility, you may want to bring your bike. (Bike rentals are very limited.)

For additional information, contact:

UH Hilo, College of Continuing Education & Community Service
200 W. Kawili Street
Hilo, HI 96720-4091

Phone: (808) 974-7664
Fax: (808) 933-8863
Email: ccecs@hawaii.edu
Summer: <http://hilo.hawaii.edu/depts/summer>
Facebook: <http://www.facebook.com/UHHiloSummer>
Marine: <http://hilo.hawaii.edu/depts/summer/UHHilosMarineScienceSummerProgram.php>,



*What Marine Science Summer session
students have to say about the program:*

*"Great experience – very beneficial skills learned that I feel like I
can actually apply to my career." In reference to QUEST*

*"This course is life changing! I would recommend it in a heart-
beat." In reference to QUEST*

"It was a wonderful experience, I learned so much."

*"Instead of just staying in the classroom, we were able to get out
and have hands on experience."*

*"Professors were excellent and very friendly and personable. They
added so much to the class material."*

"I think that the subject matter was perfect."

*"I loved turtle tagging — it was such a wonderful experience and
I learned so much."*

"I loved being on the boat!"

"Great classes!"

"My favorite classes that I've ever taken."

"Awesome"



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Phone: (808) 974-7664
Fax: (808) 933-8863
Email: ccecs@hawaii.edu
Summer: <http://hilo.hawaii.edu/depts/summer>

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photographs for this publication.**