Aging and Gerontology

Degrees and Certificates Offered: Undergraduate Certificate in Aging, BA in interdisciplinary studies (emphasis on aging), Advanced Certificate in Gerontology

See the “School of Medicine” section of the Catalog for more information.

Cell and Molecular Biology

Graduate Program

Biomedical Science A 209
1960 East-West Road
Honolulu, HI 96822
Tel: (808) 956-8552
Fax: (808) 956-9530
Web: www.hawaii.edu/cmb

Graduate Faculty

*D. S. Haymer, PhD (Chair)—molecular genetics of Diptera

Biochemistry

*D. M. Jameson, PhD—energetics and dynamics of protein interactions; fluorescence spectroscopy
*K. Kumashiro, PhD—solid-state nuclear magnetic resonance
*S. E. Seifried, PhD—molecular recognition and transcriptional control
*A. G. Theriault, PhD—molecular biology of lipid metabolism and heart disease
*A. Yanagihara, PhD—biochemistry of neurotoxins, neuroactive compounds in cnadarians

Cancer Biology

*A. Bachmann, PhD—biology of membrane proteins in cancer
*J. S. Bertram, PhD—cancer preventative agents, gap junctions, and intercellular communication
*R. V. Cooney, PhD—carcinogenesis
*T. Donlon, PhD—molecular diagnostics of cancer
*L. N. Kolonel, MD, MPH, PhD—dietary and biomarker studies in multiethnic populations
*A. F. Lau, PhD—oncogenes, cellular transformation and signal transduction
*L. Le Marchand, MD, PhD—cancer epidemiology, breast cancer risk
*P. Lorenzo, PhD—diacylglycerols and their participation in carcinogenesis and malignant transformation
J. Ramos, PhD—MAP kinase pathway
*C-W. Vogel, MD, PhD—biochemistry of cellular toxins, neuroblastoma
*R. K. Wada, MD—molecular oncology, oncogene regulation, tumor differentiation

Cell Signaling

*A. Fleig, PhD—excitation-contraction coupling in muscle
*R. Penner, MD, PhD—calcium signaling in neurons and immune cells
*H. Turner, PhD—molecular biology of ion channels in the immune and nervous system

Developmental Biology

*R. Allsopp, PhD—cell biology
*T. Cao, PhD—cell differentiation
*H. G. de Couet, PhD—neurogenetics, cytoskeleton, cell motility
*M. G. Hadfield, PhD—settlement and metamorphosis of marine invertebrate larvae
*T. D. Humphreys, PhD—immune system of sponges, evolutionary foundations of animal immunity, molecular biology of hemichordates
*S. Lozanoff, PhD—developmental biology and craniofacial development
*M. Martindale, PhD—cellular, molecular and evolutionary basis of biological pattern formation
*S. Robinow, PhD—cell death in development
*E. Seaver, PhD—segment polarity signals in annelids
*A. Wikramanayake, PhD—embryological techniques with modern applications to cell and molecular biology
Degrees Offered: MS in biomedical science (cell and molecular biology), PhD in biomedical science (cell and molecular biology)

The Academic Program

The cell and molecular biology (CMB) program in biomedical science represents an interdisciplinary approach to graduate education with faculty in many sub-disciplines of biology dedicated to helping qualified students pursue original research using modern molecular biology. The first cohort of students was admitted in August 2000. The CMB program brings together faculty from three colleges and three research institutes. Planning for collaborative research is emphasized in this program, as well as solid training in a variety of laboratory techniques.

The CMB program provides fellowships for PhD students in their first year of training, and additional support in the way of teaching assistantships for qualified applicants after that time. Training in the program is intended to prepare students for careers in academia, in research institutes, and in the ever-expanding areas of biotechnology in the private sector.

Master’s students fall into two categories, depending on whether they opt for a Plan A (thesis) or Plan B (non-thesis). The MS Plan B is usually a terminal degree, appropriate for professionals in medical technology, government, and related fields who wish to obtain broad training in modern genetics to advance their credentials in their chosen fields. The completion of the MS Plan A serves as a qualifying examination for students who intend to continue toward the PhD in cell and molecular biology. It may also serve as a terminal degree for those who wish to pursue careers as research technicians, either in the public or private sector. Those who seek the PhD degree usually wish to make a career in college and university teaching and research, in research for industry and government, or in medicine, dentistry, or medical technology.

Advising

For complete details regarding the program, contact Lyn Hamamura at lynn@hawaii.edu or visit the website at www.hawaii.edu/cmb.

Graduate Study

Applicants are expected to have at least a bachelor’s degree emphasizing biological or physical sciences with courses in calculus, organic chemistry, biochemistry, genetics, and cellular and molecular biology. Applicants with MD degrees are welcome. Results of the Graduate Record Examination (GRE) general test should be submitted with the application, and students whose native language is not English are required to take the Test of English as a Foreign Language (TOEFL). Three letters of recommendation from former instructors or research supervisors, a CMB program graduate express form, and transcripts from previous universities or colleges attended must also be submitted.

Master’s Degree

The curriculum core of the CMB program is a specialized lecture class, spanning two semesters (CMB 621-622). The remaining credit requirements can be fulfilled by specialized...
courses, seminars, and research units as recommended by the particular committee and research advisor each student picks to guide their academic program. Following the completion of the two semester core course, the student is expected to pass a qualifying exam, form a committee, and then propose, complete, and defend an original research project (MS Plan A) or study plan and research paper (MS Plan B).

**Doctoral Degree**

PhD candidates do not need to have completed a master’s degree. If an MS was not earned through the CMB program, the core lecture class is required (CMB 621-622). Formal course requirements beyond the core include additional courses specified by the dissertation committee, including CMB 626 Ethics in Biomedical Research and three laboratory rotations. The student is expected to form a committee, and then propose, complete, and defend an original research project.

**Selected Specialized Courses**

**Cell Biology**
- MICR 641 Ultrastructure of Cells
- MICR 655 Advanced Virology
- MBBE 620 Plant Biochemistry
- REPR 603 Biology of Gametes, Fertilization, and Embryos
- TPSS 614 Cellular Genetics of Crops
- TRMD 604 Infectious Disease Microbiology
- TRMD 671 Advanced Medical Protozoology
- TRMD 690 Seminar in Tropical Medicine and Public Health
- ZOOL 610 Topics in Developmental and Reproductive Biology

**Molecular Biology**
- BIOC 624 Protein Interactions
- BIOC 730 Phage, Plasmids, and Recombinant DNA
- BIOP 633 Nucleic Acids
- CMB 625 Advanced Topics in Genetics
- CMB 654 Genetics Seminars
- CMB 680 Molecular Genetics
- MICR 625 Advanced Immunology
- MICR 661 Bioinformatics and Comparative Genomics
- MICR 671 Bacterial Genetics
- MBBE 673 Organization and Expression of the Plant Genome
- MBBE 680 Methods in Plant Molecular Biology

**Neurobiology**
- PHRM 640 Neuropharmacology
- PHYL 606 Human Neurophysiology
- PHYL 607 Membrane Physiology
- PHYL/ZOOL 642 Cellular Neurophysiology
- ZOOL 712 Topics in Nerve/Muscle Physiology

**Communication and Information Sciences**

School of Communications
Crawford Hall Room 330
Honolulu, HI 96822
Tel: (808) 956-3340
Fax: (808) 956-5396
E-mail: cominfos@hawaii.edu
Web: www.hawaii.edu/cis

**Faculty**

*J.-I. Kim, PhD (Chair)—communication research methods, communication theories, diffusion of innovations

*E. S. Biagioni, PhD—networking protocol design

*K. A. Binsted, PhD—artificial intelligence, software design for mobile devices

*T. J. Brislin, PhD—mass communications, ethics

*T. X. Bui, PhD—electronic commerce, information policy

*H. M. Chen, PhD—information technology architecture and system integration, global information system development

*D. Chin, PhD—artificial intelligence, natural language processing, user modeling, intelligent agents, intelligent user interfaces, intelligent software maintenance, empirical evaluation, geographic information systems

*W. G. Chismar, PhD—information technology, telecommunications, medical informatics

*M. E. Crosby, PhD—human-computer interaction, cognitive science, interface design for searching

*E. J. Davidson, PhD—social cognitive aspects of information systems development methods

*D. Davis, PhD—social impact of communication technologies and computer-based services, communication and gender, gendered applications of telecommunication technologies

*G. M. Fontaine, PhD—intercultural and organizational communication

*W. M. Gersch, DrEng—mathematical statistics, time series, information and computer sciences

*V. H. Harada, PhD—library management, information literacy

*R. Huard, PhD—human-computer interaction, user research, emerging communication technologies

*S. Y. Itoga, PhD—database systems, expert systems, logic programming, information and computer sciences

*P. Jacso, PhD—CD-ROM technology, computer system analysis, online technology, Database design

*P. M. Johnson, PhD—software engineering, high-tech entrepreneurship

*R. Kazman, PhD—software engineering, human-computer interaction

*B. Keever, PhD—public affairs reporting, evaluating race and ethnicity in the news, media history

*R. Knuth, PhD—information policy, children’s materials, international librarianship, history of the book and libraries

*R. Lamb, PhD—interorganizational technologies, sociotechnical networks, use of intranets in organizational environments, management of information systems

*A. Y. Lew, PhD—systems programming, systems analysis, software engineering, information and computer sciences

* Graduate Faculty
*C. G. R. Macdonald, PhD—new communication technologies, multimedia, telecommunication
*I. Miyamoto, DrEng—software engineering
*D. M. Nahl, PhD—human-computer interaction, information services, information literacy, driving informatics
*D. Pager, PhD—compiler theory, theory of computability, artificial intelligence
*R. R. Panko, PhD—risks in information systems, organizational communication and technology
*W. W. Peterson, PhD—programming languages, software engineering, signal and data transmission
*D. Port, PhD—software economics, management information systems, software engineering
*L. Quiroga, PhD—information filtering systems, virtual collaboration, information retrieval, databases, library systems
*N. Reed, PhD—artificial intelligence, autonomous agents
*W. E. Remus, PhD—information technology management, human judgment and forecasting, artificial intelligence and neural networks
*R. H. Sprague, PhD—information sciences, decision support systems, electronic document management, management of information systems
*J. Stelovsky, DrTechSc—computer hypermedia, human-computer interaction, cognitive science
*K. Sugihara, DrEng—algorithms, distributed computing and database systems, visual languages
*D. Suthers, PhD—human-computer interaction and artificial intelligence, technology for education
*D. Streveler, PhD—medical informatics, international public health, issues in the electronic medical record and in telemedicine
*D. J. Wedemeyer, PhD—telecommunication policy and planning, new media and society, forecasting methods and application in communication development in Asia and the Pacific
*A.Wertheimer, PhD—information science, library history, Japanese-American print culture
*R. G. Worthley, PhD—statistics, information technology management

Cooperating Graduate Faculty
*J. C. Ady, PhD—organizational communication, sojourner adjustment, international negotiation, conflict management
*D. L. Alden, PhD—marketing communications
*A. R. Arno, PhD—ethnography of communication, communication and law, social theory, news media
*D. Ashworth, PhD—learning technology
*K. Bridges, PhD—computer cartography
*R. W. Brislin, PhD—intercultural communication
*R. Doktor, PhD—international business, organizational behavior, strategy
*J. M. Gersting, PhD—computer science
*J. L. Gersting, PhD—computer science
*A. Hac, PhD—software systems, telecommunications and wireless networks, network management
*C. P. Ho, PhD—instructional technology
*M. K. Lai, PhD—research methods
*M. P. McGranaghan, PhD—computer cartography, geographical information systems
*J. R. Wills, DBA—technology marketing
*S. Zhang, PhD—quantitative research methodology, statistics

Affiliate Graduate Faculty
*N. Abramson, PhD—electrical Engineering
*M. A. Hukill, PhD—communication theories, visual communication, telecommunication and broadcast systems, services and policy (Southeast Asia specialty), ICT in the travel and tourism industries

Degree Offered: PhD in communication and information sciences

The Academic Program
The Interdisciplinary Doctoral Program in the Communication and Information Sciences (CIS) offers a PhD degree integrating and drawing faculty from the fields of communication, computer science, library and information science, and management information systems. Because of the broad knowledge base required to support this interdisciplinary approach, the program also draws on such fields as political science, economics, engineering, operations research, and behavioral sciences.

Recipients of the PhD will undertake careers in colleges and universities, industry, government, and private organizations.

Complete details on this program are outlined on the website, www.hawaii.edu/cis.

Admission Requirements
- Master’s degree in business administration, communication, library and information science, information and computer sciences, or a closely related field
- GRE or GMAT scores
- Three letters of recommendation
- Elementary statistics knowledge advisable

Applicants from foreign countries must be academically qualified, proficient in English, and financially self-sufficient. Minimum TOEFL scores of at least 600/250/100 (paper/computer/Internet based TOEFL) are required for admission.

Program Requirements
The student will select four areas of emphasis from the following eight: communication and information theories, communication policy and planning, computer software systems, data communications, human-computer interaction, information storage and retrieval, management information systems, and organizational communication.

Students must pass comprehensive examinations in the four of these areas of emphasis, and complete and defend an original dissertation.

Course Requirements
Regardless of area of emphasis, students are required to complete the following three core courses with a grade of at least a B:
CIS 701 Communication/Information Theories of Society
CIS 702 Communication/Information Technologies
CIS 703 Communication/Information Research Methods

All students are required to be enrolled while in residence in CIS 720 Interdisciplinary Seminar in Communication and Information Sciences.
Courses for the program are to be selected from among the courses listed below and from graduate offerings in related disciplines as directed by the student’s advisory committee.

**Communication/Information Theories**
- COM 611 Communication Theories (3)
- COM 633 Telecommunications Architectures (3)
- COM 645 Mass Communication (3)
- COM 650 Communication Policy (3)
- COM 660 Communication Planning (3)
- ECON 606 Microeconomic Theory I (3)
- ECON 607 Macroeconomic Theory I (3)
- LIS 715 Seminar in Information Policy (3)
- POLS 610 Political Theory and Analysis (3)
- SOC 611 Classical Sociological Theory (3)
- SOC 612 Contemporary Sociological Theory (3)
- SOC 711 Seminar in Sociology of Knowledge (3)

**Communication Policy and Planning**
- COM 633 Telecommunication Architectures (3)
- COM 634 Telecommunication Services (3)
- COM 643 Intercultural Communication (3)
- COM 644 International Communication (3)
- COM 650 Communication Policy (3)
- COM 660 Communication Planning (3)
- LIS 668 Pacific Islands Information Resources (3)
- LIS 715 Seminar in Information Policy (3)
- PLAN 600 Planning Theory and Practice (3)
- POLS 630 International Relations (3)
- POLS 635 Topics in International Relations (3)
- POLS 640 Comparative Politics (3)
- POLS 645 Politics and Development: Regional (3)
- POLS 670 Introduction to Public Policy (3)

**Computer Software Systems**
- ICS 611 Compiler Theory and Construction (3)
- ICS 612 Theory of Operating Systems (3)
- ICS 613 Advanced Software Engineering (3)
- ICS 621 Analysis of Algorithms (3)
- ICS 622 Systems Modeling and Evaluation (3)
- ICS 641 Theory of Computation (3)
- ICS 661 Artificial Intelligence II (3)
- ICS 662 Computer Algebra (3)
- ICS 681 Computer Graphics (3)
- ICS 691 Topics in Software (3)

**Data Communications**
- ICS 451 Data Networks (3)
- ICS 651 Computer Networks (3)
- ITM 687D Seminar in Information Systems–Telecommunications (3)
- ITM 687J Seminar in Information Systems–Data Communication (3)
- EE 449 Computer Communication Networks (3)
- EE 668 Telecommunication Networks (3)

**Human Computer Interaction**
- ICS 463 Human Computer Interaction I (3)
- ICS 464 Introduction to Cognitive Science (3)
- ICS 664 Human-Computer Interaction II (3)
- ICS 665 User Interfaces and Hypermedia (3)
- ICS 667 Advanced HCI Design Methods (3)
- ICS 668 Technology Supported Collaboration (3)
- LIS 677 Human Dimension in Information Systems (3)

**Information Storage and Retrieval**
- LIS 663 Basic Database Searching (3)
- LIS 664 Abstracting and Indexing for Information Services (3)
- LIS 667 Advanced Database Searching (3)
- LIS 670 Introduction to Information Science and Technology (3)
- LIS 674 Database Design and Creation (3)
- ICS 321 Data Storage and Retrieval (3)
- ICS 421 Database Systems (3)
- ICS 461 Artificial Intelligence I (3)

**Management Information Systems**
- BUS 619 Information Technology for Management (3)
- ITM 660 Current Topics in Information Systems (3)
- ITM 704 Doctoral Seminar in Information Systems (3)

**Organizational Communication**
- COM 623 Organizational Communication (3)
- COM 624 Organizational Communication Training (3)
- COM 643 Intercultural Communication (3)
- ITM 687M Seminar in Information Systems–Communication and Technology (3)
- MGT 648 International Business: Environment and Enterprise (3)
- MGT 670 International Management and Industrial Relations (3)
- SOC 613 Organizational Analysis (3)

**Environmental Studies**
**Degrees and Certificates Offered:** Undergraduate Certificate in Environmental Studies, BA in interdisciplinary studies (emphasis on environmental studies)

See the “Colleges of Arts and Sciences” section of the *Catalog* for more information.
**Graduate Interdisciplinary Specializations**

These graduate specializations offer graduate students the opportunity to complete a course of study utilizing courses and faculty from several different fields. Participants must apply for admission and must also be admitted to a 'regular' graduate program.

**Ecology, Evolution, and Conservation Biology**

2538 McCarthy Mall-Snyder 407  
Honolulu, HI  96822  
Tel: (808) 956-4602  
Fax: (808) 956-4707  
E-mail: eecb@hawaii.edu  
Web: www.hawaii.edu/eecb/

**Graduate Faculty**

R. A. Kinzie, PhD (Chair)—aquatic ecology, coral reefs and tropical streams  
L. Arita-Tsutsuimi, PhD—behavioral ecology of insects  
W. W. Au, PhD—acoustics of marine animals  
C. Birkeland, PhD—coral reef ecology and management, marine community ecology  
B. Bowen, PhD—phylogeography, evolution and conservation, genetics of marine vertebrates  
R. L. Cann, PhD—conservation genetics and molecular evolution  
D. Carlson, PhD—population regulation, life-history evolution and speciation  
S. Conant, PhD—conservation biology, life history and ecology of Hawaiian birds  
R. H. Cowie, PhD—evolutionary biology and conservation of land and freshwater snails  
C. C. Daehler, PhD—invasive plants, plant-insect interactions  
H. G. de Couet, PhD—developmental and molecular evolution  
M. J. deMaintenon, PhD—evolution of gastropod organogenetic patterns  
D. Drake, PhD—plant ecology, conservation biology, plant-animal interactions  
D. C. Duffy, PhD—conservation biology (basic and applied)  
N. L. Etkin, PhD—medicines of the “informal sector” in contemporary Hawai‘i  
J. Fragoso, PhD—ecology of tropical animals, plants and ecosystems  
L. A. Freed, PhD—evolutionary ecology, behavioral ecology and conservation biology  
E. Gaidos, PhD—microbial ecology, modeling of ecological and molecular evolution  
M. G. Hadfield, PhD—larval biology of marine invertebrates, conservation and demography of Hawaiian tree snails  
D. Haymer, PhD—molecular evolution  
T. Hunt, PhD—evolutionary theory, including ecology and biogeography  
T. Idol, PhD—forest soils and nutrient cycling  
K. Y. Kaneshiro, PhD—sexual selection and biology of small populations  
S. C. Keeley, PhD—plant molecular systematics and evolution  
E. Laws, PhD—phytoplankton, physiology, issues related to climate change and water pollution  
T. W. Lyttle, PhD—population genetics and chromosome evolution  
M. Q. Martindale, PhD—evolution of development of metazoan animals  
W. J. Mauz, PhD—environmental physiology, environmental toxicology, ecological energetics, respiration physiology, and herpetology  
W. C. McClatchey, PhD—the flora, ethnobotany and prehistory of the Solomon Islands and the Rotuma Islands  
M. D. Merlin, PhD—biogeography, ethnobotany, Pacific natural history  
R. H. Messing, PhD—behavioral ecology of insect parasitoids and biological control  
C. W. Morden, PhD—molecular systematics and evolution of plants and algae  
**D. Mueller-Dombois, PhD—vegetation ecology  
R. Ostertag, PhD—community structure and nutrient dynamics of tropical forests  
J. D. Parrish, PhD—ecology of aquatic (marine) communities, fishery biology  
D. K. Price, PhD—evolutionary genetics of behaviors  
M. A. Rigidley, PhD—human-environment systems analysis: modeling and evaluation of society-environment interactions  
D. Rubinoff, PhD—insect systematics, conservation biology, and the evolution of ecological traits  
L. Sack, PhD—whole-plant physiology and ecology  
C. M. Smith, PhD—physiological ecology of marine macrophytes, marine biology  
L. E. Sponsel, PhD—human ecology in tropical forests and deforestation  
J. S. Stimson, PhD—population ecology  
K. Suryanata, PhD—political economy of natural resources  
A. D. Taylor, PhD—population ecology  
A. Teramura, PhD—environmental stress physiology, global climate change, ecosystem analysis and biodiversity  
T. Ticktin, PhD—ethnoecology and conservation  
R. Toonen, PhD—population biology and larval ecology of marine invertebrates  
T. Tricas, PhD—behavior and sensory biology of sharks, rays and reef fishes  
L. Wester, PhD—plant geography, biogeography of islands, human-plant relationships  
A. Wikramanayake, PhD—evolution of pattern formation in metazoan embryos  
B. A. Wilcox, PhD—natural resource management, ecology of infectious diseases  
C. Womersley, PhD—environmental physiology, biochemical adaptation, parasitology

**Affiliate Graduate Faculty**

A. Allison, PhD—systematics and population biology  
A. Asquith, PhD—insect systematics and conservation  
W. W. Au, PhD—sensory biology of cetaceans  
L. V. Basch, PhD—ecology, evolution and conservation of marine life histories and benthic communities

**Emeritus Faculty**
The EECB program provides opportunities for students at UH Mānoa to expand their knowledge and gain experience in this integrative discipline. Our interdisciplinary graduate program brings together faculty members from agronomy and soil science, anthropology, biomedical sciences (genetics and molecular biology), botanical sciences, entomology, geography, horticulture, microbiology, oceanography, and zoology—along with all their skills and technologies— to provide the training students need to contribute effectively to this research area.

EECB is implemented as a “specialization” within existing graduate programs of the departments whose faculty participate in this program. This means that the primary duties and responsibilities of each EECB student are to satisfy the requirements of their own home academic department. The EECB specialization serves to allow students to expand beyond the traditional departmental boundaries in terms of formulating research questions, choosing thesis/dissertation committee members and taking academic courses. EECB graduate students can be enrolled in either the doctor of philosophy or master of science degree in their home department.

Students accepted to the EECB graduate specialization must already have been accepted into the graduate program of the various departments participating in the EECB program. Course work in statistics, organic chemistry, biochemistry, genetics, evolution and ecology are considered most important for admission into the EECB program.

Details on the EECB program and application forms can be found at the EECB website www.hawaii.edu/eecb/.

Admission Requirements

Only students who have been accepted to a graduate program in one of the academic departments at UH Mānoa can be accepted to the EECB program. Regardless of department admission deadlines, the EECB program deadline is February 1 for the fall semester.

Applicants must submit the application, GRE’s, transcripts and letters of recommendation to the academic department to which they are applying. EECB applicants must write “EECB” in box 6 of the application where it specifies “area of specialization” and follow the directions for submitting the application to the UH Graduate Division.

The EECB application consists of a letter expressing interest in EECB and a copy of your complete UH Mānoa graduate application materials. Copies of the application should be sent to the EECB program office at the above address. Copies (can be unofficial) of letters of recommendation, transcripts and GRE scores should also be sent to the EECB office. Failure to send the copies may cause delays in processing your EECB application.

Applicants to the EECB program must have a faculty sponsor to be considered for admission to the EECB program. Begin by reviewing the Faculty section of this website and contacting faculty members whose interests are similar to yours.

Course Requirements for Specialization in Ecology, Evolution and Conservation Biology

Course requirements for ALL EECB graduate students:

- Complete all degree requirements of the home academic department
- Participate in EECB activities, particularly the “Evolunch” seminar series
- One course in ecology at the 600 or 700 level (at least 2 credits with an A or B grade)
- One course in evolution at the 600 or 700 level (at least 2 credits with an A or B grade)
- One course in conservation biology at the 600 or 700 level (at least 2 credits with an A or B grade)

Acceptable graduate (600-700 level) courses currently being offered are listed below. Because some offerings change from semester to semester, consult the EECB webpage for an updated list.

In addition to course requirements for the specialization in EECB, each academic department has its own course requirements. Courses from the EECB course list that are taken to fulfill departmental requirements can also be used to fulfill EECB requirements, however, a single course can only satisfy one of the three EECB requirements.

The EECB program provides opportunities for students at UH Mānoa to expand their knowledge and gain experience in this integrative discipline. Our interdisciplinary graduate program brings together faculty members from agronomy and soil science, anthropology, biomedical sciences (genetics and molecular biology), botanical sciences, entomology, geography, horticulture, microbiology, oceanography, and zoology—along with all their skills and technologies—to provide the training students need to contribute effectively to this research area.
Course Offerings
(Updated September 2005)
(New courses or one-time offerings not listed here but approved by the EECB curriculum committee may also count towards the Ecology, Evolution or Conservation Biology requirement. Please check with the EECB website and consult with the Graduate Education Committee.)

Ecology
- ANTH 606 Anthropology of Infectious Disease (3)
- BOT 644 Ethnoecological Methods (3)
- BOT 650 Ecology Seminar (2)
- BOT 651 Invasion Biology (3)
- BOT/ZOOL 652 Population Biology (3)
- PEPS 671 Insect Ecology (3)
- MICR 680 Advances in Microbial Ecology (3)
- NREM 680 Forest/Agroforest Ecosystem Analysis (3)
- OCN 626 Marine Microplankton Ecology
- OCN 627 Ecology of Pelagic Marine Animals (3)
- OCN 628 Benthic Biological Oceanography
- ZOOL 606 Principles of Animal Behavior (2)
- ZOOL 606L Principles of Animal Behavior Lab (1)
- ZOOL 620 Marine Ecology (3)
- ZOOL 621 Evolutionary Ecology (4)
- ZOOL 623 Quantitative Field Ecology (3)

Evolution
- ANTH 604 Physical Anthropology (3)
- BOT 661 Hawaiian Vascular Plants (3)
- BOT 662 Advanced Systematics (4)
- BOT 669 Molecular Systematics and Evolution (3)
- PEPS 633 Insect Genetics (3)
- PEPS 662 Systematics and Phylogenetics (3)
- CMB 604 Evolutionary Genetics (2)
- CMB 625 Advanced Topics in Genetics (2)
- CMB 650 Population Genetics (3)
- CMB 680 Molecular Genetics (3)
- MICR 671 Bacterial Genetics (3)
- TPSS 615 Quantitative Genetics (3)
- ZOOL 606 Principles of Animal Behavior (2)
- ZOOL 606L Principles of Animal Behavior Lab (1)
- ZOOL 621 Evolutionary Ecology (4)
- ZOOL 719 Topics in Systematics & Evolution (V)

Conservation Biology
- ANTH 620 Theory in Social and Cultural Anthropology (3)
- BOT 651 Inversion Biology (3)
- BOT/ZOOL 690 Conservation Biology (3)
- PEPS 675/675L Biological Control (3)
- GEOG 752 Research Seminar: Resource Management (3)
- GEOG 758 Research Seminar: Conservation (3)
- OCN 621 Biological Oceanography (3)
- ZOO 750 Topics in Conservation Biology (3)
- TCBES 600 (UH Hilo) Principles of Tropical Conservation Biology and Environmental Science

Content Varies (but may be count towards a specific area, depending the topic)
- BOT 612 Seed Ecology (V)
- BOT 612 Restoration of Mānoa Valley (V)
- BOT 612 Plants, Animals and Islands (V)
- BOT 654 Pollination Ecology (3)
- GEOG 750 Research Seminar: Biogeography (3)
- ZOOL 714 Topics in Animal Behavior (V)

Marine Biology
Marine Science Building 307
1000 Pope Road
Honolulu, HI 96822
Tel: (808) 956-7633
Fax: (808) 956-9225

Graduate Faculty
- M. Alam, PhD—microbiology
- M. J. Atkinson, PhD—oceanography/HIMB
- W. W. L. Au, PhD—HIMB
- J. H. Bailey-Brock, PhD—zoology
- C. Birkeland, PhD—zoology
- R. Cann, PhD—genetics
- S. Conant, PhD—zoology
- I. Cooke, PhD—zoology
- H. G. de Couet, PhD—zoology
- M. Diamond, PhD—anatomy
- J. Douglas, PhD—microbiology
- G. Grau, PhD—zoology
- L. Herman, PhD—psychology
- K. Holland, PhD—HIMB
- T. D. Humphreys, PhD—biochemistry
- D. Jameson, PhD—biochemistry
- P. Jokiel, PhD—HIMB/zoology
- D. Karl, PhD—oceanography
- R. Kinzie III, PhD—zoology
- J. Leong, PhD—HIMB
- Y. Lin, PhD—physiology
- P. E. Nachtigall, PhD—HIMB
- J. Parrish, PhD—zoology
- F. Robert, PhD—microbiology
- C. Smith, PhD—botany
- J. Stimson, PhD—zoology
- T. Tricas, PhD—zoology
- A. Wikramanayake, PhD—zoology

The Academic Program
The marine biology specialization is a UH-wide program focusing on recent advances in the understanding of marine systems at the ecological, organismic, and cellular-molecular levels. Students can select courses, advisors, and research opportunities from a wide range of specialties, including: marine botany, ecology, genetics, virology, microbiology, and zoology, aquaculture, behavioral biosystematics, biological oceanography, coral reef biology, fisheries and molecular biology.

The marine biology specialization is available to graduate students in botany, microbiology, oceanography, and zoology.
Prospective graduate students should apply first to one of these programs. Applications from students who have been accepted to botany, microbiology, oceanography, or zoology who have also indicated a desire to specialize in marine biology are reviewed by the Marine Biology Admissions Committee.

Students specializing in marine biology supplement the courses required for a degree in their chosen field with courses specific to marine biology. The actual selection is determined by the student in consultation with his or her advisor. Graduate student research is carried out in the laboratories of the graduate faculty. These include laboratories in Edmondson Hall, Snyder Hall, the St. John Laboratory (botanical sciences), the Marine Science Building, the Hawai’i Institute of Marine Biology (located on Coconut Island in Kanehoe Bay), the Bekesy Laboratory, and the Kewalo Laboratory of the Pacific Biomedical Research Center. Research capabilities include DNA sequencing using PCR technology; video and acoustic recording for ecological and behavioral studied of coral reef and planktonic organisms; transmission and scanning electron, ultraviolet, and light microscopy; electrophoretic analysis; flow cytometry; and radioisotope tracer studies.

**Selected courses:**
- ANSC 360 Topics in Aquaculture Science (3)
- ANSC 450 Aquaculture Production (3)
- BE 604 Aquaculture Systems (3)
- BOT 480 Algal Diversity and Evolution (4)
- BOT 482 Adaptations of Plants to Marine Environments (3)
- BOT 680 Marine Macrophytes Seminar (2)
- MICR 653 Methods in Microbiology Oceanography (3)
- OCN 450 Aquaculture Production (3)
- OCN 621 Biological Oceanography (3)
- OCN 626 Marine Microplankton Ecology (4)
- OCN 627 Ecology of Pelagic Marine Animals (4)
- OCN 628 Benthic Biological Oceanography (4)
- OCN 653 Methods in Microbiology Oceanography (3)
- OCN 750 Topic in Biological Oceanography (V)
- PHYL 701 Undersea and Hyperbaric Physiology (3)
- PSY 633 Behavioral Processes of Marine Mammals (3)
- ZOOL 466 Fisheries Science (3)
- ZOOL 467 Ecology of Fishes (3)
- ZOOL 475 Biology of Invertebrates (3)
- ZOOL 620 Marine Ecology (3)
- ZOOL 666 Systematic Ichthyology (3)
- ZOOL 716 Topics in Fish and Fisheries Biology (V)

**Interdisciplinary Studies**

**Degree Offered:** BA in interdisciplinary studies

See the “Colleges of Arts and Sciences” section for more information.

**International Cultural Studies**

International Cultural Studies Program
East-West Center, 1601 East-West Road
Burns Hall 2004
Honolulu, HI 96848
Tel: (808) 944-7243
Fax: (808) 944-7070
E-mail: culture@hawaii.edu
Web: www2.hawaii.edu/~culture/

**Faculty**
- J. Goss, PhD (Director)—Geography
- T. Bigalke, PhD—East-West Center
- E. Buck, PhD—East-West Center
- A. Arno, PhD—Anthropology
- C. Andrade, PhD—Hawaiian Studies
- C. Bacchilega, PhD—English
- J. Byrd, PhD—Political Science
- M. Das Gupta, PhD—Ethnic Studies and Women’s Studies
- K. Ferguson, PhD—Political Science
- C. Franklin, PhD—English
- C. Fujikane, PhD—English
- D. Gladney, PhD—Asian Studies
- D. Hanlon, PhD—History
- M. Helbling, PhD—American Studies
- V. Hereniko, PhD—Pacific Islands Studies
- R. Hsu, PhD—English
- J. Kaomea, PhD—Education
- M. Koikari, PhD—Women’s Studies
- K. Kosasa, PhD—American Studies
- L. McReynolds, PhD—History
- F. Lau, PhD—Music
- J. Logan, PhD—Languages and Literatures of Europe and the Americas
- L. Lyons, PhD—English
- B. Murton, PhD—Geography
- J. Okamura, PhD—Ethnic Studies
- J. K. Osorio, PhD—Hawaiian Studies
- K. Pauka, PhD—Theater
- R. Perkinson, PhD—American Studies
- J. Rieder, PhD—English
- A. Robillard, PhD—Sociology
- M. Sharma, PhD—Asian Studies
- N. Shibusawa, PhD—History
- N. Silva, PhD—Political Science
C. Sinavaiana, PhD—English  
N. Soguk, PhD—Political Science  
K. Teiwa, PhD—Pacific Islands Studies  
K. Tengan—Ethnic Studies  
R. Trimillos, PhD—Asian Studies  
T. Wesley-Smith, PhD—Pacific Islands Studies  
G. White, PhD—East-West Center and Anthropology  
G. Yang, PhD—Sociology  
C. Yano, PhD—Anthropology  
M. B. Yue, PhD—East Asian Languages and Literature  
M. Yoshihara, PhD—American Studies  
J. Zuern, PhD—English

Certificate Offered: Graduate Certificate in International Cultural Studies

The Academic Program

The Graduate Certificate in International Cultural Studies offers an interdisciplinary course of study that enhances existing degrees in Arts and Sciences, area studies, and the professional schools.

Given that the language of culture is increasingly heard in debates about issues as diverse as nationalism, human rights, immigration, trade, the environment, education, media, and the arts, the certificate program develops tools for a more informed and critical understanding of the role of culture in public debates and policy.

Hawaii’s location at the intersection of local, U.S. and Asian spheres of influence provides an important vantage point from which to take up the social and cultural transformations taking place in today’s era of economic globalization and restructuring. Issues of cultural identity and politics are sharply drawn in the distinctive mix of indigenous, local and international communities in Hawaii today. Program courses and activities support a variety of approaches to analyzing and understanding the significance of culture, and of cultural difference, as global flows of people, culture and capital increase the heterogeneity and flux of everyday life throughout the world.

The certificate program brings together faculty whose research and teaching focus on the politics and production of culture in the context of local, national and international relations. Faculty research methods and styles emphasize the interpretive approaches of the humanities and social sciences.

Certificate Requirements

The Certificate program combines course work with directed research and, where possible, community involvement.

- A core of three courses (7 credits), including:
  - International Cultural Studies: History and Theory (CUL 610)
  - International Cultural Studies Speaker Series (CUL 609)
  - Capstone Experience (CUL 750). The Capstone Experience is an individual research project supervised by a participating faculty member.

- Three electives (9 credits), including two taken outside the student’s department and no more than one undergraduate course.

Peace Studies

Degrees and Certificates Offered: Undergraduate Certificate in Peace Studies, BA in interdisciplinary studies (emphasis on peace studies). See the “Colleges of Arts and Sciences” section for more information.

Population Studies

Certificate Offered: Graduate Certificate in Population Studies. See the “Colleges of Arts and Sciences” section for more information.

Resource Management

Saunders Hall 107  
2424 Maile Way  
Honolulu, HI 96822  
Tel: (808) 956-7381

Certificate Offered: Graduate Resource Management Certificate

The Graduate Resource Management Certificate is a cooperative program primarily involving the College of Social Sciences, the Department of Urban and Regional Planning (anthropology, economics, geography), the College of Tropical Agriculture and Human Resources (natural resources and environmental management), and the East-West Center (Program on Environment, Program on Resources: Energy and Minerals). Because of its diverse topical components, multidisciplinary faculty, and practical application throughout Asia and the Pacific, the program is ideal for students who are pursuing graduate studies in traditional disciplines and also seeking expertise in environmental resource management.

This program provides students with specialized training in an area that augments their primary field and develops their pragmatic problem-solving and decision-making skills through analysis of real-world problems. Any student who has previously been admitted as a classified graduate student at UH Manoa is eligible to apply for admission to this certificate program. Interested applicants should contact their advisor or any representative of the program in the collaborating departments and institutions.

To earn this certificate, students are expected to complete 15 credit hours, at least 9 of which are at the graduate level. For more information, contact the Department of Urban and Regional Planning.