SCHOOL OF Medicine

Administration

Biomedical Science T-101
1960 East-West Road
Honolulu, HI 96822
Tel: (808) 956-8287
Fax: (808) 956-5506
Web: hawaiimed.hawaii.edu

Dean: Edwin C. Cadman
Senior Associate Dean: Satoru Izutsu
Vice Dean: T. Samuel Shomaker
Vice Dean: Allan D. Robb

General Information

The John A. Burns School of Medicine works to improve the quality, effectiveness, and equity of health-care delivery in Hawai'i and the Pacific region. The school provides opportunity for qualified residents of Hawai'i and the Pacific Islands, including students from various underrepresented socioeconomic and minority groups, to qualify for an MD degree; provides MD graduates with competency to enter postgraduate programs; and provides residency training programs with emphasis on primary-care specialties.

The school also administers graduate research and professional programs leading to MS, PhD and MPH degrees in the basic medical sciences and health-related fields; BS degree programs in speech pathology and audiology and medical technology; and undergraduate courses for majors in nursing, dental hygiene, biology, nutrition, and other fields.

Contents

In addition, the school—together with the Hawai'i Medical Association and the Hawai'i Consortium for Continuing Medical Education—sponsors continuing medical education for physicians in the state of Hawai'i.

The school provides instruction for five major categories of students:

1. Candidates for the MD degree, admitted directly by the school's own admissions committee;
2. Candidates for MS degrees in biomedical sciences (with concentrations in cell and molecular biology, physiology, and tropical medicine), public health or in speech pathology and audiology who apply through the Graduate Division of the Mānoa campus;
3. Candidates for the MPH degree who apply through the Graduate Division of the Mānoa campus;
4. Candidates for PhD degrees in biomedical sciences with concentrations in biostatistics-epidemiology, cell and molecular biology, physiology, and tropical medicine who apply through the Graduate Division of the Mānoa campus; and
5. Candidates for undergraduate degrees in speech pathology and audiology or in medical technology, who apply through the undergraduate admissions office.

In addition, three certificates are offered through the school: an undergraduate certificate in aging, an advanced certificate in

gerontology, and a post-baccalaureate certificate for medical technology clinical training.

Accreditation

The school is accredited by the Liaison Committee for Medical Education of the Association of American Medical Colleges and the Council on Medical Education of the American Medical Association.

Additionally, all graduate medical education programs in Honolulu hospitals are accredited as University of Hawai'i School of Medicine residency programs. Approximately 240 physicians serve as house staff members in these hospitals under the direction of the medical school faculty.

Affiliations

The school maintains affiliations with the following community hospitals and medical facilities for medical student and resident training: Hawai'i State Hospital; Kaiser Foundation Hospital; Kalihi-Pālama Health Clinic; Kapi'olani Medical Center for Women and Children; Kapi'olani Medical Center at Pali Momi; Kokua Kalihi Valley Health Center; Kuakini Medical Center; Lē'ahi Hospital; The Physician Center; Queen Emma Clinics; Queen's Medical Center; Rehabilitation Hospital of the Pacific; St. Francis Medical Center; St. Francis Medical Center–West; Shriners Hospital for Crippled Children; Straub Clinic and Hospital; Tripler Army Medical Center; Wahiawa-General Hospital; Wai'anae Coast Comprehensive Health Center; and the Veterans Affairs Outpatient Clinic.

Degrees

Bachelor's Degrees: BS in medical technology, BS in speech pathology and audiology

Professional Degree: MD

Master's Degrees: MS in biomedical sciences (cell and molecular biology, physiology, and tropical medicine); MPH and MS in public health; MS in speech pathology and audiology

Doctoral Degrees: PhD in biomedical sciences (biostatistics-epidemiology, cell and molecular biology, physiology, and tropical medicine)

Advising

Premedical advising is conducted by the Student Academic Services Office of the Colleges of Arts and Sciences.

Academic Policies

Undergraduate and graduate students in the School of Medicine must adhere to the academic policies of the University. Medical students are exempted from certain Mānoa policies and instead must follow academic policies germane to the MD program. Copies are available in the school's Office of Student Affairs and the Learning Resource Room.

Undergraduate Programs

For information on medical technology or speech pathology and audiology, refer to the respective sections of the Catalog.

MD Program

The MD program follows a problem-based curriculum, which was implemented in fall 1989. It includes the following key features: knowledge is acquired in problem-based modules; self-directed learning is fostered in small group tutorials; students are actively involved in the learning process; faculty members function as both facilitators of learning and resource experts; basic sciences are learned in the context of solving clinical problems; no discipline-specific courses are required; and interdisciplinary basic science lectures are integrated around cases. In addition, students are trained to think critically and to evaluate new information and research data. Evaluation is based on competence in a variety of problem-solving exercises. Early clinical and community experiences are also unique features of the curriculum. The curriculum courses are listed under biomedical sciences (BIOM).

Admission Requirements/Application Process

Candidates for MD training must have completed a minimum of 90 credit hours of college-level course work. A baccalaureate degree is strongly recommended.

- Biology (with lab) (8)
- Molecular and Cell Biology (with lab) (4)
- General Chemistry (with lab) (4)
- Biochemistry (4)
- General Physics (with lab) (8)

The science courses should be of the type acceptable for students majoring in the above areas (not survey-level) AND, where indicated, include laboratory experience. Additional enrichment in the biological and social sciences (e.g., immunology, genetics, microbiology, human anatomy, physiology, embryology, psychology, and sociology) are encouraged. Applicants also must be fully competent in reading, speaking, and writing the English language.

Applicants must apply through the American Medical Colleges Application Service (AMCAS). The service permits an applicant to file a single application, which is forwarded to as many participating medical schools as designated. Application request forms may be obtained from a pre-med adviser, any participating medical school, or the Office of Student Affairs after April of each year.

Applicants also must take the nationally administered Medical College Admission Test (MCAT), which deals with knowledge of the physical and biological sciences and skills in verbal reasoning and writing, within three years of expected date of matriculation.

Each entering class of MD candidates is limited to 62 students. Correspondence regarding admissions should be directed to Admissions Office, John A. Burns School of Medicine, 1960 East-West Road, Honolulu, HI 96822 or via e-mail nishikim@jabsom.biomed.hawaii.edu. Further information may be obtained on the Web at hawaiimed.hawaii.edu.

Applications are accepted from June 1 through December 1 for entry the following year.

Graduate Programs

The School of Medicine offers the master's and/or PhD degrees with concentrations in biostatistics-epidemiology, cell and molecular biology, physiology, public health, speech pathology and audiology, and tropical medicine.

Refer to the specific departments for further information. Inquiries should be addressed to the chair of the specific concentration.

Postgraduate Programs

Postgraduate medical education programs in Honolulu hospitals in family practice, geriatric medicine, internal medicine, obstetrics and gynecology, pathology, pediatrics, psychiatry, surgery, orthopedic surgery, and a transitional year are conducted by faculty and accredited as University of Hawai'i School of Medicine residency programs. Approximately 240 physicians are involved in training, which lasts one to seven years. These physicians serve as members of the house staff in the hospitals while studying their chosen specialty.

The school conducts a postgraduate medical education program at Chubu Hospital in Okinawa for graduates of Japanese medical schools.

Certificate Programs

Students majoring in other areas can earn an Undergraduate Certificate in Aging or an Advanced Certificate in Gerontology through the Center on Aging at the School of Medicine.

Undergraduate Certificate in Aging

The undergraduate certificate requires 15 credits of approved gerontology courses in three different departments, three courses at the 300 level and two courses at or above the 400 level.

Advanced Certificate in Gerontology

The Advanced Certificate in Gerontology may be earned by taking 15 credits of course work in gerontology, at least 9 of which are at or above the 600 level. Courses must be in three different fields (e.g. public health, law, social work, sociology, etc.) and must include an interdisciplinary seminar in aging and a field study experience with a related paper. With permission, classified graduate students may double-count 6 credits with their major area of study.

Admission requirements include classified graduate status at UHM or, for unclassified graduate students, a baccalaureate degree from an accredited institution and aging related work experience.

Post-baccalaureate Certificate for Clinical Training

For students in medical technology, clinical training at affiliated clinical facilities follows graduation. A certificate is awarded at the completion of this training.

Special Programs

Imi Ho'ola Post-Baccalaureate Program

The John A. Burns School of Medicine is actively involved in the recruitment, admission, and retention of students from disadvantaged backgrounds, who are interested in pursuing an MD degree. Imi Ho'ola (Hawaiian for "Those who seek to Heal") is a post-baccalaureate program designed to provide educational opportunities to students from disadvantaged backgrounds capable of succeeding in medical school. Although Imi Ho'ola is not limited to persons of Hawaiian, Filipino, Samoan, Chamorro, and Micronesian descent, a large number of these students in the past have been able to demonstrate that they are from a disadvantaged background.

Each school year, 10 students are selected to participate in this one-year program, and upon successful completion, they matriculate the following year into the John A. Burns School of Medicine. The curriculum emphasizes the integration of concepts and principles in the sciences and humanities and further develops students' communication and learning skills. Eligible individuals are from a disadvantaged socioeconomic and/or educational background who have demonstrated a commitment to serve areas of need in Hawai'i and the Pacific.

Native Hawaiian Center of Excellence

The Native Hawaiian Center of Excellence is a project undertaken by the John A. Burns School of Medicine to address the barriers to health care for native Hawaiians. The mission is to improve the school's ability to train physicians with the commitment and special skills to care for the indigenous peoples of the state. The center offers recruitment initiatives to interest Hawaiian high school and college students in medical careers and prepare them for entry into health professions; development of a student tracking system to identify Hawaiian students at academic risk early in their medical training so that appropriate interventions can be made; a one-year fellowship to recruit additional native Hawaiian faculty for the school; revision of the medical school's curriculum to ensure that all students are exposed to the unique health problems and interpersonal skills involved in dealing with Hawaiian patients; and student research electives in Hawaiian health and medical care.

Center on Aging

The Center on Aging was established by the University of Hawai'i Board of Regents in July 1988. Its mission is to stimulate and coordinate gerontological activities on the UH Mānoa campus, to establish gerontology as an academic field of excellence at Mānoa, and to promote collaboration between the University and other organizations concerned with aging.

Center on Aging staff are involved in a number of research and training projects: exploring cultural variations in caregiver, help seeking, perceptions of chronic disease (e.g., cancer, dementia, and diabetes) and death and dying practices; examining volunteer behavior in seniors; tracking client and caregiver satisfaction with homecare services; coordinating

specialized training and workshops in gerontology for local and international organizations; and developing and testing educational materials related to elder abuse and neglect, end-of-life care and decision making; and health promotion. These projects are being conducted in collaboration with a number of UH departments (e.g., the School of Law, the School of Nursing and Dental Hygiene, the School of Social Work, and the College of Social Sciences) and community agencies (e.g., the Executive Office on Aging, the Hawaiian Islands Hospice Organization, the St. Francis International Center for Healthcare Ethics, and Papa Ola Lokahi).

Honors and Awards

Alpha Omega Alpha is the honorary society for medical students.

Allied Medical Sciences

Biomedical Science T-101
1960 East-West Road
Honolulu, HI 96822
Tel: (808) 956-8287
Fax: (808) 956-5506

Faculty

D. Little, EdD—educational administration, minority education
N. Judd, PhD—public health, minority education
S. Matsumoto, PhD—anatomy and reproductive biology, minority education
C. Murry, DrPH—public health, minority education
C. Peterson, PhD—biochemistry, minority education
K. Sakamoto, MS—minority education
P. M. Tim Sing, MD—minority education
B. Young, MD—psychiatry, minority education

Allied Medical Sciences department offers course work in a number of fields that do not lead to the MD degree. These include medical history, medical technology, and speech pathology and audiology. For a description of these programs, see the appropriate sections.

Anatomy and Reproductive Biology

Biomedical Science T-311
1960 East-West Road
Honolulu, HI 96822
Tel: (808) 956-8287
Fax: (808) 956-5506
Web: hawaiimed.hawaii.edu

Faculty

*S. Lozanoff, PhD (Chair)—craniofacial biology
*M. Diamond, PhD—sexual behavior and reproduction, neural and hormonal influences on sexuality
B. M. Jones, MS, PT—orthopedic physical therapy
Y. Marikawa, PhD—mammalian embryogenesis, cell differentiation, and body pattern formation
J. L. Rosenheimer, PhD—neurobiology of aging
S. Tsuhako, MD—medical education
W. S. Ward, PhD—DNA structure, embryogenesis, and sperm biology
*R. Yanagimachi, DSc—mammalian gametes and fertilization, fertility control, gamete and embryo manipulation

Adjunct Faculty

C. D. Boyd, PhD—matrix pathobiology
K. Csiszar, PhD—matrix pathobiology

The Academic Program

Anatomy (ANAT) and reproductive biology (REPR) is a discipline that embraces biological structure from the molecular level to the body as a whole. It provides the student with an opportunity to develop a broad base of knowledge in biological structure for subsequent research into specific processes in mammalian development, neurobiology of behavior, endocrinology, and reproduction, including that of farm animals. Students will have access to the other biomedical science disciplines in an integrated curriculum. Collaborative research projects with clinical and basic science faculty offer students unique opportunities for clinically oriented research. Students may work with faculty members who are world renowned in the areas of fertilization, reproductive endocrinology, and neurobiology of behavior.

This interdisciplinary area of concentration is administered by the Cell and Molecular Biology Program in which graduate faculty from several departments participate and contribute to the program.

Information on the Cell and Molecular Biology Program can be found in the "Interdisciplinary Programs" section of this *Catalog*, on the program's Web site (www.hawaii.edu/cmb), or interested applicants can contact the following program chairs:

Dr. Rebecca Cann
John A. Burns School of Medicine
Cell and Molecular Biology Program
1960 East-West Road, Biomed A-209
Honolulu, HI 96822

Dr. Scott Lozanoff
John A. Burns School of Medicine
Department of Anatomy and Reproductive Biology
1960 East-West Road, Biomed T-309
Honolulu, HI 96822

Institute of Biogenesis Research

The Institute of Biogenesis Research (IBR) was established in 1999 following the "Honolulu Technique" cloning technology which provided scientists with a new and valuable tool for researching the molecular processes involved in embryo formation, cell differentiation, aging, and disease. The institute will pursue four major areas of reproduction and development:

* Graduate Faculty

germ cell research, cloning, transgenesis, and prevention and cure of congenital malformation.

The overall vision of the IBR is to bring together and support an international team of scientists committed to advancing our understanding of the biology of mammalian reproduction and development.

Biochemistry and Biophysics

Biomedical Science T-705
1960 East-West Road
Honolulu, HI 96822
Tel: (808) 956-8490
Fax: (808) 956-9498

Faculty

*N. V. Bhagavan, PhD (Chair)—clinical biochemistry, role of surfactant in pulmonary function, thyroid and cholesterol metabolism, structural studies on human serum albumin

*R. J. Guillory, PhD—bioenergetics, mechanism of mitochondrial oxidative phosphorylation and membrane-dependent energy-linked reactions, structure of contractile proteins

*H. F. Mower, PhD—problems in carcinogenesis in normal and neoplastic systems

Cooperating Graduate Faculty

J. S. Bertram, PhD—carcinogenesis, growth regulation, chemo-prevention of cancer

R. V. Cooney, PhD—role of nitrogen oxides in carcinogenesis

M. A. Dunn, PhD—nutritional biochemistry, trace elements

J. Stollberg, PhD—synaptogenesis, localization of membrane constituents

Adjunct Faculty

G. Edlin, PhD—regulation of viruses and bacteria, molecular mechanism of disease, molecular evolution

B. Vennesland, PhD—enzymology of photosynthesis and nitrate reduction

G. Weber, MD, PhD—thermodynamics of biomolecular interactions, fluorescence spectroscopy

The Academic Program

Biochemistry (BIOC) and biophysics (BIOP) entail the study of the chemistry and physics of living systems. In these disciplines, students learn how the fundamental compounds present in all cells react in enzyme-catalyzed processes to form the macromolecular assemblies that in turn govern cell growth, cell function, and cell senescence. The understanding of these myriad and complex processes ultimately requires an understanding of the underlying chemical and physical processes. Indeed, molecular biophysics attempts to evaluate, by the methods of physics, biological processes at the molecular level. These disciplines are currently in a time of explosive growth and development. New knowledge is rapidly being discovered; new theories are being proposed and tested; and ever wider application of the principles of biochemistry, biophysics, and molecular biology to the understanding of other biological and medical sciences is occurring.

Students benefit from the study of biochemistry and biophysics in many ways. Productive and fulfilling lifelong careers are available to graduates of master's and doctoral degree programs. Opportunities exist in government, industrial, and academic institutions that can lead to administrative responsibilities and policy-making positions. Teaching positions at the undergraduate and graduate levels are also available.

The study of biochemistry and biophysics provides the student with a broad understanding of life processes that are also fundamental to the understanding of many of the disciplines of biological, agricultural, and medical sciences. It is often an advantage to enter these fields after the completion of a program of study in biochemistry or biophysics.

The Department of Biochemistry and Biophysics at the University of Hawai'i offers the student broad training in the fundamentals of both biochemistry and biophysics. Courses are offered at introductory and advanced levels. Specialty courses that bring the student to the frontiers of the developing subdisciplines are a part of the department's curriculum. Laboratory and research experience is available either through formal courses or through participation in one of the many funded research programs of the department.

Cell and Molecular Biology

Biomedical Science A-209
1960 East-West Road
Honolulu, HI 96822
Tel: (808) 956-8552
Fax: (808) 956-9530

Faculty

*D. S. Haymer, PhD (Chair)—molecular evolution and developmental genetics

*J. S. Bertram, PhD—carcinogenesis, growth regulation and chemo-prevention of cancer
panic and depression; gender differences in emotional behavior

*D. C. Blanchard, PhD—ethoexperimental analysis of defense and aggression; preclined pharmacoethology of anxiety,

*J. L. Brewbaker, PhD—horticultural genetics

*G. D. Bryant-Greenwood, PhD—preterm birth in the human, role of relaxins in fetal membrane rupture

*R. L. Cann, PhD—molecular and evolutionary genetics

*T. D. Humpreys II, PhD—molecular biology of development

*D. M. Jameson, PhD—fluorescence spectroscopy; biomolecular dynamics and interactions; ribosomal proteins

*A. F. Lau, PhD—molecular biology of cancer

*T. W. Lyttle, PhD—population genetics, cytogenetics

*M. D. Rayner, PhD—structure-function relationships in voltage-gated ion channels

*J. F. Scott, PhD—molecular biology of DNA

*S. E. Seifried, PhD—macromolecular interactions, transcription factor recognition of specific DNA sequences, protein subunit assembly

* Graduate Faculty

*R. K. Wada, MD—molecular oncology, oncogene regulation, tumor differentiation

Adjunct Faculty

T. A. Donlon, PhD—human genetics
A. Fleig, PhD—electrophysiology (patch-clamp); calcium signaling in muscle cells; regulation of calcium signaling; cellular neuroimmunology
R. Penner, PhD—electrophysiology (patch-clamp); intra- and intercellular signal transduction; regulation of calcium signaling; cellular neuroimmunology

The Academic Program

Faculty in the Department of Cell and Molecular Biology have ongoing research programs in areas such as genetics, cell biology, biochemistry and neurophysiology. The department also provides instruction in the basic principles and concepts of genetics, biochemistry and molecular biology to medical students, graduate students from various disciplines, and undergraduates.

The faculty also participate in the training of PhD and MS graduate students in the interdisciplinary Cell and Molecular Biology Program. This program brings together faculty with expertise in biochemistry, cell biology, cell signaling, developmental biology, genetics, immunology/retrovirology, matrix pathobiology, neurobiology/neurophysiology, plant molecular physiology, and reproduction function for collaborative teaching and research activities. Information on the Cell and Molecular Biology (CMB) Program can be found in the Interdisciplinary Programs section of this *Catalog*, on the CMB Web site (www.hawaii.edu/cmb), or interested applicants can contact the program chair:

Dr. Rebecca Cann
John A. Burns School of Medicine
Cell and Molecular Biology Program
1960 East West Road, Biomed A-209
Honolulu, HI 96822

Family Practice and Community Health

The Physician Center at Mililani
95-390 Kuahelani Avenue
Mililani, HI 96789
Tel: (808) 627-3235
Fax: (808) 627-3262

Faculty

N. A. Palafox, MD, MPH (Interim Chair)—family practice and community health
J. E. Aoki, MD—family practice
K. A. Bauman, MD, MPH—family practice and community health
S. P. Berry, MD—family practice
P. J. Bohnert, MD—psychiatry
L. E. Buenconsejo, MD—family practice
T. H. Chen, MD—family practice
P. R. Donnelly, MD—family practice
B. V. Gozun III, MD—family practice
M. E. Kaanoi, MD—family practice
K. K. Kau, MD—family practice
G. Maskarinec, PhD—medical anthropology
J. S. Minami, MD—family practice
M. Myers, PhD—psychology
A. W. Nichols, MD—family practice, sports medicine
K. M. Withy, MD—family practice
S. Yamada, MD, MPH—family practice

* Graduate Faculty

Degree Offered: MD

The Academic Program

The family practice and community health (FPCH) department is a cooperative effort whose faculty members are involved with community partnerships in health professions education. Teaching goals are based on the assumption that primary medical care includes not only high quality, accessible, and acceptable care for episodes of illness, but also a concern for the promotion of a healthy lifestyle and environment for the population served.

Medical-student instruction focuses on basic conceptual tools and practical preceptorships with people providing primary care.

Geriatric Medicine

John A. Burns School of Medicine
347 N. Kuakini Street- HPM-9
Honolulu, Hawai'i 96817

Faculty

P. L. Blanchette, MD, MPH (Chair)—geriatric medicine
J. J. Buzanoski, MD—geriatric medicine
J. D. Curb,MD, MPH—geriatric medicine
K. H. Masaki, MD—geriatric medicine
D. Minaai, MD—geriatric medicine
H. Petrovitch, MD—geriatric medicine
B. L. Rodriguez, MD, PhD—clinical epidemiologist
E. Somogyi-Zalud, MD—geriatric medicine
M. K. Tanabe, MD—geriatric medicine
L. P. Tokushige, MD—geriatric medicine
L. A. Tom, MD—geriatric medicine
V. G. Valcour, MD—geriatric medicine

Degree Offered: MD

The Academic Program

Geriatric medicine is dedicated to the care of older people and to healthy aging throughout life, so that the frailties and disabilities common in older years can be prevented. To provide comprehensive care, geriatrics is often interdisciplinary, and clinical instruction takes place in a wide variety of settings, including outpatient, acute hospital, nursing home, retirement,

home care and rehabilitation settings. The core of the curriculum includes aspects of internal medicine and pharmacology, including psychiatry, adult development, family medicine, neurology, urology, gynecology, and rehabilitation medicine.

The Geriatric Medicine Program provides education for: medical students, residents in internal medicine, family practice, ob-gyn and psychiatry, fellows in geriatric medicine and geriatric psychiatry, and practicing physicians. The fully accredited Geriatric Medicine Fellowship Program is for physicians who are graduates of either internal medicine or family practice residency programs. The first year of fellowship training is designed to lead to eligibility for the certificate of added qualifications (CAQ) in geriatric medicine. Additional years of fellowship are devoted to research, consultative medicine, medical education, medical administration, and concurrent advance degrees.

The Geriatric Medicine Program is involved in an extensive array of funded research programs, thus providing training and experience in research for students at all levels.

Medical History

Biomedical Science T-101
1960 East-West Road
Honolulu, HI 96822
Tel: (808) 956-8287
Fax: (808) 956-5506

The Division of Medical History (MDHX) examines the general area of medical history, particularly that of the Pacific and Asia. It is strengthened by a growing collection of material in the Hawai'i Medical Library.

Medical Technology

Biomedical Science C-206
1960 East-West Road
Honolulu, HI 96822
Tel: (808) 956-8557
Fax: (808) 956-5506
Web: www.hawaii.edu/medtech/Medtech.html

Faculty

P. L. Taylor, MS (Chair)—medical technology
N. N. Ebisu, BS—medical technology
K. K. Hamamoto, BS—medical technology
K. K. Morton, BS—medical technology
D. Y. Teshima, MPH—medical technology
*A. G. Theriault, PhD—clinical chemistry

Degree and Certificate Offered: BS in medical technology, Post-baccalaureate Certificate for Clinical Training

* Graduate Faculty

The Academic Program

Medical technology (MEDT) is a health-care profession in which medical technologists (clinical laboratory scientists) perform laboratory procedures used for the promotion of health and the diagnosis, monitoring, and treatment of diseases. Technical skills needed to carry out the tasks include microscopy, venipuncture, manipulation of various labware, and operation of automated instruments. Results of these procedures are essential to the delivery of quality health care. The field is broad and involves several disciplines: chemistry, hematology, immunohematology (blood banking), immunology, and microbiology.

Medical technology is a constantly evolving profession. The continued development of the health-care industry and the emergence of other career opportunities have sustained the demand for clinical laboratory scientists. Employment opportunities exist in hospitals, clinics, physician's offices, reference laboratories, DNA labs, research, education, forensic medicine, industry, consulting, sales, marketing, veterinary medicine, and many more areas.

Admission Requirements

Courses listed in the first two years of the curriculum are required before admission to the medical technology program. Clinical laboratory scientists perform various procedures which directly impact patient care, so it is important that all applicants be able to perform certain essential functions (technical standards). With appropriate accommodations, if needed, everyone must be able to perform the activities listed below. Additional professional skills are taught in classes after admission.

- Manipulate labware to transfer or prepare reagents and samples (e.g., pipet, charge hemocytometer, prepare blood smear)
- Operate simple instruments according to instructions (e.g., cell counter, centrifuge, spectrophotometer)
- Perform microscopic examinations on various specimens and report the results (e.g., leukocyte differential count, cell morphology, urinary sediments)
- Follow written or verbal directions to perform laboratory tests and report results

Applicants are assessed through performance in MEDT and other courses, an interview, an essay, and personal evaluations. Academic record, interests and aptitude, communication skills, scientific orientation, and personal traits are also considered.

Other Requirements

Medical technology majors are required to have professional liability insurance, which costs about $40 per year. Also, immunization for Hepatitus B virus is highly recommended.

Advising

Students are encouraged to see a medical technology adviser as soon as possible and prior to each registration period. Appointments can be made by contacting the division office.

Clinical Training

Clinical training at affiliated clinical facilities follows graduation. Positions at our affiliated sites are limited, but there are other accredited facilities in the continental United States. A certificate is awarded at the completion of this training.

Accreditation and Affiliations

The program is accredited by the National Accrediting Agency for Clinical Laboratory Sciences.

Clinical affiliations are with the Blood Bank of Hawai'i, Hawai'i State Department of Health, Diagnostic Laboratory Services, Hilo Medical Center, Kaiser Permanente Medical Center, St. Francis Medical Center, Tripler Army Medical Center, Castle Medical Center, Clinical Laboratories of Hawai'i, Kapi'olani Medical Center, Kaua'i Veterans Memorial Hospital, Kona Community Hospital, Kuakini Medical Center, Maui Memorial Hospital, Straub Clinic and Hospital, Tri-City Medical Center, University Health Services Mānoa, Wahiawa General Hospital, Wai'anae Coast Comprehensive Health Center, and Wilcox Memorial Hospital.

Certification and Licensure

After clinical training, students are eligible to take a national certification exam. In Hawai'i, state licensure is also required.

Undergraduate Study

Bachelor's Degree

Requirements

- Complete the degree requirements that satisfy the University's General Education Core requirements and program requirements
- Earn a minimum cumulative GPA of 2.0
- Submit by the specified deadline an application for graduation to the Cashier's Office during the semester preceding the awarding of the degree

Curriculum for Medical Technology

First Semester

- CHEM 161/161L (3/1)
- BIOL 171/171L (3/1)
- ENG 100 (3)
- †MEDT 151 (2)
- Core/Language/Electives

Second Semester

- CHEM 162/162L (3/1)
- PHYS 151/151L (3/1)
- HIST 151 (3)
- MATH 241 (4)
- Core/Language/Electives

Third Semester

- CHEM 272/272L (3/2)
- †MEDT 251 (2)
- PHYS 152/152L (3/1)
- HIST 152 (3)
- Core/Language/Electives

Fourth Semester

- CHEM 274/274L (3/2)
- MICR 351/351L (3/2)
- SP 151 (3) or SP 251 (3)
- Core/Language/Electives

Fifth Semester

- PHYL 301 (4)
- BIOC 441 (4)
- †MEDT 301 (3)
- Core/Language/Electives

Sixth Semester

- PHYL 302 (4)
- †MEDT 471 (4)
- †MEDT 302 (3)
- †MEDT 431 (3)
- Core/Language/Electives

Summer Session

- †MEDT 366 (2)

Seventh Semester

- †MEDT 331 (1)
- †MEDT 451 (3)
- †MEDT 457/457L (3/2)
- †MICR 461/461L (3/2)

Eighth Semester

- †MEDT 464 (3)
- †MEDT 458/458L (3/2)
- †MICR 463/463L (3/2)
- Core/Language/Electives

Post-baccalaureate Study

- Certificate for Clinical Training
- †MEDT 591 (26)

†Note: Grade of C or equivalent is required for courses highlighted with a dagger (†).

Medicine

University Tower, Queen's Medical Center
1356 Lusitana Street, 7th Floor
Honolulu, HI 96813
Tel: (808) 586-2910
Fax: (808) 586-7486
Web: medworld.biomed.hawaii.edu/

Faculty

J. E. Hastings, MD (Chair)—general internal medicine, cardiology
M. A. Antonelli, MD—general internal medicine
R. F. Arakaki, MD—endocrinology
S. Au, MD—neurology
R. D. Bart, MD—neurology

E. F. Bello, MD—infectious disease
R. K. Blaisdell, MD—hematology
P. E. Bogden, MD—general internal medicine
J. Brown, MD—infectious disease
C. S. Chan, MD—general internal medicine
D. Chow, MD—general internal medicine, infectious disease
R. I. Frankel, MD—general internal medicine
R. Friedman, MD—general internal medicine
C. S. Hew, MD—general internal medicine
C. M. Higuchi, MD—oncology
R. T. Kasuya, MD—general internal medicine, inpatient care
S. B. Kemble, MD—general internal medicine, inpatient care
M. K. Mau, MD—endocrinology
J. S. Melish, MD—endocrinology
P. Mohideen, MD—endocrinology
E. J. Morgan, MD—pulmonary
M. Nagoshi, MD—general internal medicine
J. Onopa, MD—general internal medicine
G. A. Rediger, MD—general internal medicine
S. M. Saiki Jr., MD—general internal medicine
D. Sakai, MD—general internal medicine
I. J. Schatz, MD—cardiology
E. N. Shen, MD—cardiology
B. Shiramizu, MD—pediatrics, hematology, oncology
C. M. Shikuma, MD—infectious disease, AIDS
B. A. Soll, MD—pulmonary medicine
P. Sousa, MD—general internal medicine
K. N. Sumida, MD—hematology
E. K. Tam, MD—pulmonary
S. Y. Tan, MD—endocrinology
N. Tsai, MD—gastroenterology
M. H. C. Yee, MD—neurology

Degree Offered: MD

The Academic Program

The Department of Medicine (MED) assists the student in integrating learning in the humanities, social sciences, and the physical and biological sciences by providing progressive experiences in clinical medicine. Early attention is given to the student's acquisition of habits of continuing self-education and basic clinical skills. These skills include collection and evaluation of data, clinical problem solving, and consideration and perceptiveness in dealing with patients, their families, and other members of the health team.

The department directs integrated residency training programs in community hospitals. The close association of students and graduate physicians in these programs affords valuable learning experiences. Research in selected clinical fields, for which facilities are available, is fostered.

Obstetrics, Gynecology, and Women's Health

Kapi'olani Medical Center for Women
and Children
1319 Punahou Street, Room 824
Honolulu, HI 96826
Tel: (808) 956-7457
Fax: (808) 955-2174

Faculty

R. T. Nakayama, MD (Chair)—obstetrics and gynecology
T. C. Aeby, MD—obstetrics and gynecology
S. M. Brau, MD—obstetrics and gynecology
S. S. Brizzolara, MD—obstetrics and gynecology
LA. C. Frattarelli, MD—obstetrics and gynecology
G. I. Hirata, MD—maternal fetal
T. T. F. Huang, PhD—reproductive endocrinology, anatomy
L. E. Kamemoto, MD—obstetrics and gynecology
B. Kessel, MD—obstetrics and gynecology/reproductive endocrinology and infertility
T. S. Kosasa, MD—obstetrics and gynecology/reproductive endocrinology and infertility
G. G. Li, MD—obstetrics and gynecology
L. Millar, MD—obstetrics and gynecology, maternal fetal
J. H. Morikawa, MD—obstetrics and gynecology
A. M. Rahall, MD—obstetrics and gynecology
S. D. Sharma, MD—obstetrics and gynecology
J. K. Silva, MD—maternal fetal
K. Y. Terada, MD—gynecology oncology
B. K. Uyeno, MD—internal medicine/pediatrics
K. KC. Vu, MD—obstetrics and gynecology/reproductive endocrinology and infertility
N. E. Winn, MD—gynecology
I. Zalud, MD—maternal fetal

Degree Offered: MD

The Academic Program

Instruction in obstetrics and gynecology (OBGN) is divided into four general areas: basic clerkship, student electives, residency training, and continuing medical education. The main objectives of the basic clerkship during the third year is to give students an overall perspective of the entire field, an in-depth knowledge of women's health care, and an ability to perform those technical skills necessary for the care of women. The elective experiences are developed to allow interested students the opportunity to acquire detailed knowledge and experience in women's health care or within specific areas of care.

The department directs a residency training program for medical graduates who desire specialty training in the field. The MD education program is closely integrated with residency training to maintain communication and learning experience throughout training. The department has an active research program in the clinical area of human reproduction.

The department is divided into the following divisions: ambulatory care, education, endocrinology-infertility, fetal-maternal medicine, gynecology, obstetrics, oncology, urogynecology, and research.

Pathology

Biomedical Science D-208
1960 East-West Road
Honolulu, HI 96822
Tel: (808) 956-8860
Fax: (808) 956-5506

Faculty

J. M. Hardman, MD (Chair)—neuropathology and laboratory medicine
Y. Hokama, PhD—immunopathology
S. T. Komura, MD—general pathology
R. J. Mack, MD—general pathology
*M. L. Nelson, PhD—environmental influences on growth and development of endocrine systems, clinical anatomy
E. A. Porta, MD—liver disease
*M. Volini, PhD—molecular mechanisms of biological regulatory processes; mechanism, function, and biochemical genetics of enzymes; signal transduction to the mitochondria
H. Y. Yang, MD, PhD—kidney and surgical pathology, electron microscopy

Degree Offered: MD

The Academic Program

Pathology (PATH) is the study of disease. Instruction in pathology is open to undergraduate, graduate, and medical students and residents. All medical students may elect to take PATH 515 as a part of the problem-based learning curriculum. PATH 541 provides essential autopsy experience for all third- and fourth-year medical students, and residents may enroll in one or more of PATH 545, 670, and 699. Instruction in laboratory medicine for the practicing physician, clinical pathology, anatomic pathology, clinical immunology, and pathology of aging, nutrition, and/or alcoholism is offered.

The department directs an integrated residency program in pathology. Residents are based at Kaiser Hospital, Queen's Medical Center, and St. Francis Hospital and participate in the training of medical students and residents alike. Clinical faculty come from all the community hospitals and provide gross and microscopic specimens for demonstration and clinico-pathologic correlations for medical students and residents. In addition, they participate in seminars and give lectures along with the full- and part-time faculty.

* Graduate Faculty

Pediatrics

Kapi'olani Medical Center for Women and Children
1319 Punahou Street, Room 742
Honolulu, HI 96826
Tel: (808) 956-6525
Fax: (808) 949-4232

Faculty

R. C. Rudoy, MD (Chair)—infectious disease
B. Y. Aoki, MD—critical care
K. M. Ash, MD—neonatology
V. Balaraman, MD—neonatology
R. D. Bart, MD—neurology
R. J. Bidwell, MD—adolescent medicine
R. B. Boychuk, MD—critical care/emergency medicine
A. G. Britten, MD—critical care
R. K. S. Chang, MD—critical care
D. C. Chow, MD—pediatrics
D. C. Derauf, MD—pediatrics
D. Easa, MD—neonatology
A. P. Guerrero, MD—general/child psychiatry
S. L. Hammar, MD—adolescent medicine
C. Hirai, MD—neonatology
A. S. Inaba, MD—emergency medicine
L. K. Iwaishi, MD—developmental pediatrics
L. M. Iwamoto, MD—neonatology
D. K. Kurahara, MD—pediatric rheumatology
D. K. M. Kwock, MD—infectious disease
M. S. I. Kyono, MD—pediatrics
W. T. Kyono, MD—hematology/oncology
M. T. Lee, MD—pediatrics
S. W. H. Loo, MD—neonatology
D. Medeiros, MD—hematology/oncology
M. E. Melish, MD—infectious disease
M. S. Michels, MD—pediatrics
D. T. Murai, MD—neonatology
J. E. Musgrave, MD—pediatric nephrology
G. S. Naguwa, MD—pediatrics
L. Y. Nakagawa, MD—emergency medicine
K. T. Nakamura, MD—neonatology
B. M. Nishikawa, MD—pediatrics
J. K. Okamoto, MD—developmental/behavioral pediatrics
M. E. Patrinos, MD—neonatology
E. C. Pohlson, MD—pediatric surgery
V. Reddy, MD—pediatric cardiology
W. K. T. Shim, MD—pediatric surgery
B. Shiramizu, MD—hematology/oncology
M. Uehara, MD—developmental pediatrics
P. A. Vanderford, MD—critical care
R. Wada, MD—hematology/oncology
R. W. Wilkinson, MD—hematology/oncology
C. M. Wilson, MD—gastroenterology
R. D. Wong, MD—infectious disease
K. A. Woodruff, MD—hematology/oncology
F. Y. Yamamoto, MD—allergy/immunology

K. S. Yamamoto, MD—pediatric rheumatology
L. G. Yamamoto, MD—emergency medicine

Degree Offered: MD

The Academic Program

Pediatrics (PED) is the specialty of medical science concerned with the physical, emotional, and social health of children from birth to young adulthood. The discipline deals with biological, social, and environmental influences on the developing child and with the impact of disease and dysfunction on development.

The Department of Pediatrics offers specialty training for the medical student, as well as post-MD residency training and subspecialty experience.

Pharmacology

Leahi Hospital
3675 Kilauea Ave., Rm 16P
Honolulu, HI 96822
Tel: (808) 956-8936
Fax: (808) 956-3165

Faculty

*G. C. Whittow, PhD (Acting Chair)—thermoregulation
*E. Furusawa, MD, PhD—viral chemotherapy
*S. Ramanathan, PhD—biochemical pharmacology
*S. Shibata, MD, PhD—cardiovascular, smooth muscle pharmacology

Affiliate Graduate Faculty

C. F. T. Uyehara, PhD—developmental and cardiovascular pharmacology

The Academic Program

Pharmacology (PHRM) is a medical science concerned with the effects of drugs and chemicals on living organisms. The subject embraces a knowledge of the chemistry, actions, absorption, fate, excretion, and uses of drugs. Traditionally, the greatest interest in drugs has been with the health professions. Today, however, a knowledge of pharmacology and the allied field of toxicology is relevant to all segments of society. It is important that the general public acquire a better understanding of the value, limitations, and potentially harmful effects of drugs and chemicals.

The general objectives and functions of the Department of Pharmacology include (a) teaching the discipline to both health professionals and nonprofessionals, (b) training graduate students, (c) conducting scholarly research in the discipline, and (d) participating in community-service activities that require the expertise of pharmacologists.

* Graduate Faculty

Physiology

Biomedical Science T-608
1960 East-West Road
Honolulu, HI 96822
Tel: (808) 956-8640
Fax: (808) 956-9722

Faculty

*G. C. Whittow, PhD (Chair)—thermoregulation
*J. R. Claybaugh, PhD—body fluid regulation
*H. L. Gillary, PhD—human evoked potentials
*J. M. Hanna, PhD—physiological anthropology
*D. A. Lally, PhD—exercise physiology
*Y. C. Lin, PhD—cardiovascular, hyperbaric physiology
*R. M. Smith, PhD—free radical biology
R. K. Wada, MD—cell pathophysiology

Cooperating Graduate Faculty

J. J. McNamara, MD—cardiopulmonary physiology
J. G. Starkus, PhD—axonology
*C. W. Weems, PhD—reproductive endocrinology

Affiliate Graduate Faculty

R. Brill, PhD—fish physiology
G. H. Hartung, PhD—exercise physiology
S. E. McNeil, PhD—molecular physiology
J. Pegg, MD—diving medicine

Degrees Offered: MS in biomedical science (physiology), PhD in biomedical science (physiology)

The Academic Program

Physiology (PHYL) is the study of the function of animals, i.e., how they work. As part of the School of Medicine, the department places emphasis on human physiology in its teaching. However, research is conducted on animals as diverse as laboratory rats and tropical seabirds. Many of the department's courses are needed by students seeking health-related careers, such as dental hygiene, dentistry, medical technology, medicine, nursing, nutrition, physical therapy, public health, and the social sciences. Graduate students in physiology may elect to conduct research at the molecular or cellular level, on organs such as the lungs, or on the whole animal or person. Higher degrees in physiology prepare students for teaching careers in universities, community colleges, and high schools, as well as for research careers at universities, hospitals, government laboratories, and large pharmaceutical companies. Other students obtain positions in sports-training activities or in health and fitness programs in hospitals or private businesses.

Graduate Study

The PhD and MS Plan A programs require a combination of course work and original research, the latter forming the basis of the student's thesis or dissertation. Both degrees may serve as an introduction to a research career. The MS Plan B

program is also offered.

Applicants must submit three letters of recommendation together with either GRE or MCAT scores. All applicants are expected to have adequate backgrounds in biology, chemistry, mathematics, molecular biology, physics. The course requirements of admitted students vary with their degree and specialization, but all candidates for the MS and PhD degrees must take a written qualifying examination.

There are special opportunities for research in a new cardiopulmonary laboratory developed in conjunction with surgeons at Kaiser Moanalua Medical Center. In addition to laboratories in the Biomedical Sciences building, there are special facilities for research in endocrinology at Tripler Army Medical Center.

Master's Degree

The MS (Plan B) degree serves as training for teaching positions at the high school, community college, or four-year college level. It may also be a prelude to a medical or dental education. The MS concentration in exercise physiology provides adequate preparation for a career in sports medicine and training and in health and fitness programs in hospitals and private businesses.

Requirements

In addition to passing a written qualifying examination, candidates for the MS Plan B degree are required to prepare a written paper and give an oral presentation as well as fulfilling course requirements (total of 30 credits). Candidates for the MS Plan A degree must submit an acceptable outline of their proposed thesis research, submit and defend a thesis, and fulfill all course requirements. The MS Plan A degree requires a combination of course work and original research, the latter forming the basis of the student's thesis. In addition to qualifying students for opportunities available to MS Plan B students, the MS Plan A may serve as an introduction to a research career.

Doctoral Degree

PhD graduates usually obtain postdoctoral positions elsewhere as further preparation for a career in teaching and research at the university level.

Requirements

After they have passed their written qualifying examination, PhD candidates must take a written qualifying examination and an oral comprehensive examination and submit an acceptable outline of their proposed dissertation research. They must also submit and defend their dissertation.

Psychiatry

University Tower, Queen's Medical Center,
4th Floor
1356 Lusitana Street
Honolulu, HI 96813
Tel: (808) 586-2900
Fax: (808) 586-2940

Faculty

N. Andrade, MD (Chair)—general adult psychiatry
I. Ahmed, MD (Vice-Chair)—general adult and geriatric psychiatry; consult-liaison psychiatry
R. Antone—AIDS education
A. Arensdorf, MD—child and adolescent psychiatry
A. Austria, MD—general adult psychiatry
J. Briskin, MD—general adult psychiatry
A. Buffenstein, MD—general adult psychiatry
B. Carlton, MD—adult, child, and adolescent psychiatry
W. Char, MD—adult and child psychiatry
D. Ching, MD—child and adolescent psychiatry
A. Darmal, MD—adult, child and adolescent psychiatry
D. Elting, PhD—Director of Psycho-Social Rehabilitation
D. Friar, MD—general adult psychiatry
D. Goebert, DrPh—public health and epidemiology
A. Guerrero, MD—child and adolescent psychiatry
Z. Haghbin, MD—general adult and geriatric psychiatry
S. Ham, MD—general adult psychiatry
W. Haning, MD—general adult and addictions psychiatry
T. Henry, MD—child and adolescent psychiatry
E. Hishinuma, PhD—behavioral research and statistics
V. Ishimaru-Tseng, MD—general adult and addictions psychiatry
S. Izutsu, PhD—clinical psychology
S. Jaskiewicsz, MD—general adult and geriatric psychiatry
K. Jones, MD—adult, child and adolescent psychiatry
S. P. Kim, MD—child and adolescent psychiatry
M. Komeya, MD—general adult and geriatric psychiatry
B. Lee, MD—child and adolescent psychiatry
T. Lee, MD—child and adolescent psychiatry
L. Lettich, MD—general adult, geriatric and addictions psychiatry
L. Matsukawa, MD—general adult psychiatry
J. McCarthy, MD—child and adolescent psychiatry
C. McGee Jr., MD—child and adolescent psychiatry
M. McGrath, MD—general adult psychiatry
R. Miyamoto, PhD—behavioral research and statistics
L. Nahulu, MD—child and adolescent psychiatry
C. Ona, MD—general adult psychiatry
D. Ponce, MD—child and adolescent psychiatry
E. Roberson, MD—general adult and geriatric psychiatry
A. Serrano, MD—child and adolescent psychiatry
D. Smith, MD—general adult and forensic psychiatry
J. Smolenski, MD—general adult psychiatry
R. Snead, MD—child and adolescent psychiatry
J. Streltzer, MD—general adult and addictions psychiatry
J. Takeshita, MD—geriatric and consult-liaison psychiatry
A. Taniguchi, MD—general adult psychiatry
W. S. Tseng, MD—general adult psychiatry
J. Waldron, PhD—child and adolescent psychiatry

A. Yates, MD—child and adolescent psychiatry
R. Young, MD—adult, child and adolescent psychiatry
N. Yuen, MD—child and adolescent psychiatry

Degree Offered: MD

The Academic Program

Psychiatry (PSTY) is a branch of medicine that derives its theoretical foundations from the neurosciences, as well as the psychological and social sciences. The investigation of the biological basis of mental illness is one of the most exciting areas of medical research today and is revolutionizing our understanding of mind-body relationships.

The Department of Psychiatry contributes to the overall mission of the School of Medicine by providing leadership in psychiatric training, teaching, research, and services in Hawai'i, Asia, and the Pacific Basin. The department is committed to expanding knowledge within a cross-cultural and bio-psycho-social framework.

Traditional courses have been replaced with the problem-based learning curriculum. Psychiatric issues are addressed throughout the curriculum but are particularly emphasized in the second year during the brain and behavior sub-unit of Unit IV and in the third year during the Unit VI Psychiatry Clerkship.

Public Health Sciences and Epidemiology

Biomedical Science D-204
1960 East-West Road
Honolulu, HI 96822
Tel: (808) 956-8267
Fax: (808) 956-9174
E-mail: ogsas@hawaii.edu
Web: hawaiimed.hawaii.edu/departments/publichealth

Faculty

*F. D. Miller, MS, MPH, PhD (Acting Chair)—epidemiology
*G. Baruffi, MD, MPH—maternal and child health
*K. L. Braun, MPH, DrPH—social behavioral health sciences/Center on Aging
*M. Cheang, MPH, DrPH—social behavioral health sciences/Center on Aging
*K. Glanz, MPH, PhD—Cancer Research Center of Hawai'i
*J. S. Grove, MS, PhD—biostatistics
A. W. Guillory, MS, PhD—maternal and child health
A. M. Hartnett, MSW—social behavioral health sciences/Center on Aging
*A. R. Katz, MD, MPH—epidemiology
J. Maddock, MA, PhD—social epidemiology
G. Maskarinec, MD, MPH—Cancer Research Center of Hawai'i
*W. K. Patrick, MBBS, MPH, PhD—international health
V. Tanji, MSLS—librarian
*F. Untalan, MSW, MPH, DSW—maternal and child health and social work
*C. Waslien, MSc, PhD—PH nutrition
A. Zir, MPH—social behavioral health sciences/Center on Aging

Cooperating Graduate Faculty

M. T. Goodman, MPH, PhD—epidemiology
L. Kolonel, MD, MPH, PhD—Cancer Research Center of Hawai'i
L. LeMarchand, MD, MPH, PhD—epidemiology
A. Nomura, MD, DrPh—Cancer Research Center of Hawai'i

Degrees and Certificates: MPH, MS in public health, PhD in biomedical sciences biostatistics-epidemiology, Certificate in Public Health

The Academic Program

Epidemiology is the study of the distribution and determinants of health and disease in human populations. Epidemiology provides clues to their causes and their modes of transmission and acquisition. Epidemiologic methods, including biostatistical methods, are essential for evaluating the effectiveness of disease control measures. Epidemiology is thus the science of public health.

The master's program generally requires two years of combined study and field work but may vary depending on academic background, experience and academic goals of the student. The curriculum provides both breadth and depth. It instills knowledge and skills in epidemiologic methods, biostatistics, the collection and analysis of epidemiologic data, and the epidemiology of chronic and infectious diseases. Each student will have an academic adviser and committee with whom the student will work closely in scheduling and completing the academic requirements of the program.

Students are required to take advanced level training in chronic and infectious disease epidemiology, advanced biostatistics, and research design. There is opportunity for students to choose from epidemiology electives in the following areas: nutrition, genetics, environment, aging, AIDS, cancer and cardiovascular diseases. Course work in specialized statistical applications is also available. Students participate in on-going epidemiological research programs throughout the university during their fieldwork assignment or thesis research.

The curriculum includes a core of required basic and public health offerings that cover such topics as environmental health, health care delivery and organization, health education, and health behavior. The courses provide background and breadth in public health. A capstone paper and presentation during the final term integrates the MPH experience. The MS degree follows a similar but more research-oriented curriculum and requires the completion of a thesis.

Advising

Information, applications, and initial advising about degree programs in public health are available from the assistant dean for student services at the Office of Graduate Student Academic Services, Biomedical Science D-204, 1960 East-West

* Graduate Faculty

Road, Honolulu, HI; tel: (808) 956-8267; fax: (808) 956-9174; e-mail: ogsas@hawaii.edu; Web site: www.hawaii.edu/ogsas.

Graduate Study

Applicants will be expected to have the academic background, experience, interests and commitment for professional training in epidemiology. The academic preparation should include courses in biology, microbiology, immunology, and chemistry as well as course work covering calculus. Experience in an applied health related field or biomedical research is preferred.

Master's Degree

MPH students follow a Plan B (non-thesis) program. MS students follow a Plan A (thesis) degree program.

Plan A (Thesis) Requirements

- Minimum of 30 credit hours, 18 or more in courses numbered 600–798
- One graduate seminar
- Foundation courses
- 6 credit hours of thesis research (PH 700)
- Other courses as designated by the student's thesis committee
- Final oral examination conducted by the thesis committee

Most students will exceed the 30-credit-hour minimum to meet their educational objectives.

Plan B (Non-thesis) Requirements

- Minimum of 30 credit hours, 18 or more in courses numbered 600–798
- One graduate seminar
- Foundation courses
- Other courses as designated by the student's program committee
- Field training experience (PH 791)
- Final competency assessment

Most students will exceed the 30-credit-hour minimum to meet their educational objectives.

U.S. Peace Corps Master's International Program

The U.S. Peace Corps Master's International Program allows simultaneous application to the U.S. Peace Corps and the master's program. Successful applicants would begin their master of public health studies at the University of Hawai'i at Mānoa. After the first year, the student continues on to a Peace Corps assignment and may concurrently complete the program's field training requirement. Upon completion of the two-year Peace Corps assignment the student returns for any remaining course work and the required final orals presentation.

Doctoral Degree in Biomedical Sciences (Biostatistics-Epidemiology)

Programs of study leading to the doctor of philosophy in biomedical sciences (not public health) are administered by faculty in the Department of Public Health Sciences and Epidemiology and other departments in the School of Medicine. The concentration of biostatistics-epidemiology is based in the Department of Public Health Sciences and Epidemiology.

Candidates who successfully complete the doctoral program in biostatistics-epidemiology will be able to teach and to provide consultative service in basic aspects of both epidemiology and biostatistics. In addition, they will be able to conduct independent research in their areas of concentration.

Applicants must have an acceptable master's degree in biostatistics, epidemiology, or closely related fields or a degree providing comparable background. The Graduate Record Examination (General Test) and three letters of recommendation are required for application.

A prospective applicant is urged to communicate with a faculty member in his or her area of interest or with the program's chair and to be accepted as an applicant by a faculty member prior to admission. The faculty member involved will serve as an interim adviser upon the individual's admission into the PhD program.

All candidates take a qualifying examination during their first year of enrollment to ascertain aptitude, strengths, and weaknesses in their basic preparation. The test results will be used in determining subsequent course work. This will be followed by further course work, a comprehensive examination, and dissertation research. Candidates should refer to the *University of Hawai'i at Mānoa Catalog* for procedural and substantive details.

A few teaching and research assistantships are available for degree candidates. In addition, there are a limited number of tuition waivers. East-West Center fellowships are available for qualified candidates.

Certificate Program

The Certificate in Public Health provides general knowledge in foundations of public health and advanced knowledge in epidemiology.

Certificate students are required to complete a minimum of 15 credit hours in graduate-level public health courses. At least 7 of the credit hours will be in public health foundation courses.

Consideration for admission to the certificate program requires a bachelor's degree from an accredited U.S. college or university or its equivalent from a recognized foreign institution of higher learning. Qualified foreign students must demonstrate adequate English language proficiency.

Honors and Awards

Joseph E. Alicata Award in Public Health
Elmer J. Anderson Professional Travel Award
Koseki Award for Excellence in Community Service
Pauline Stitt Outstanding Student Award

Speech Pathology and Audiology

1410 Lower Campus Road
Honolulu, HI 96822
Tel: (808) 956-8279
Fax: (808) 956-5482

Faculty

*J. T. Yates, PhD (Chair)—audiology
K. Campbell, MS—audiology
*C. Canady, PhD—speech-language pathology
C. Fleming, MS—speech-language pathology
E. Hirohata, MS—audiology
*E. Isaki, PhD—speech-language pathology
C. Kikuta, MS—speech-language pathology
E. Lum, MS—speech-language pathology
B. Luterman, PhD—audiology
J. McLellan, PhD—speech-language pathology
J. K. Oshiro, MS—speech-language pathology
K. Pugh, PhD—audiology
P. Seymour, PhD—speech-language pathology
B. Ward, MS—speech-language pathology
*R. Weirather, PhD—speech-language pathology
*L. Weiss, PhD—speech-language pathology

Cooperating Graduate Faculty

A. Peters, PhD—linguistics
R. Stodden, PhD—special education

Adjunct Faculty

D. Kau, MS—audiology
L. Nakashima, MS—deaf education

Degrees Offered: BS in speech pathology and audiology, MS in speech pathology and audiology

The Academic Program

Speech pathology and audiology (SPA) are interrelated disciplines that deal with disorders of speech-language and/or hearing. Audiology is the study of human hearing and the diagnosis and treatment of hearing-related disorders. Speech-language pathology is the study of human communication and its developed or acquired disorders. Through these two disciplines students have the opportunity to deal with a wide variety of disabilities and disorders affecting people of all ages. Speech pathologists and audiologists treat children and adults in public and private practice in a wide variety of settings. A recent report by the federal government projected the combined fields of audiology and speech pathology as one of the fastest growing of the next decade.

The program for speech pathology and audiology at the University of Hawai'i is recognized nationally for its quality and is accredited in both areas. It is one of the few programs in the United States featuring preparation in a multilingual/multicultural environment.

* Graduate Faculty

Accreditation

The Division of Speech Pathology and Audiology is accredited by the Council on Academic Accreditation of the American Speech-Language-Hearing Association in Speech Pathology and Audiology.

Advising

Students considering the major may call the Division of Speech Pathology and Audiology to schedule an appointment with an adviser.

Undergraduate Study

Bachelor's Degree

Students pursuing a BS degree in speech pathology and audiology should enroll in the Colleges of Arts and Sciences to complete Mānoa's General Education Core curriculum and other specific requirements during their first two years of residence. Upon completion of at least 54 credit hours with a minimum GPA of 2.6, the student should apply to the Division of Speech Pathology and Audiology, School of Medicine, by filing a College and Curriculum Transfer Request form. This form may be filed at any time except during registration periods. For students applying after completion of more than 54 credit hours, the minimum required GPA will be increased.

Students in any UH community college should obtain program outlines from the Division of Speech Pathology and Audiology to familiarize themselves with the pre-SPA requirements so they can complete them during their first two years.

Requirements

- A minimum of 124 credit hours
- 60 credit hours of non-introductory courses
- 15 credit hours in courses dealing with normal development of speech, hearing, and language
- 6 credit hours in linguistics (including LING 410 and 470)
- 3 credit hours in mathematics
- 4 credit hours in zoology
- 4 credit hours in physics
- 3 credit hours in inferential statistics
- At least one speech course dealing primarily with public speaking or discussion and practice in these areas
- 9 credit hours in psychology beyond the basic course

Required specialized courses for the undergraduate major are ordinarily taken in sequence. By taking introductory courses in the summer session, the student may accelerate completion of the required program.

Junior Year

- Semester I: SPA 300, 301, and 320
- Semester II: SPA 302, 303, and 321

Senior Year

- Semester I: SPA 402, SPA 404, SPA 412
- Semester II: SPA 414, SPA 415, and SPA 421

If qualified, students may complete 1 or more credit hours of practicum in audiology.

Graduate Study

Master's Degree

The department offers the MS degree in speech pathology and audiology, with a specialization in either speech-language pathology or audiology, or a dual concentration of these professional disciplines. Candidates for the MS degree must present a minimum of 30 undergraduate credit hours in the area of study. Background preparation should include basic courses in speech-language pathology, clinical methodology, audiology, testing of hearing, habilitation and rehabilitation of hearing, speech and hearing science, clinical practicum, and a minimum of 15 credit hours relating to normal development of speech, hearing and language. If a course in statistics is not part of the undergraduate record, one must be completed as part of the graduate program.

For admission as a regular classified graduate student, applicants must present (a) a baccalaureate degree from an accredited institution of higher learning, (b) a minimum GPA of 3.0 in the major and/or in all courses taken during the final four semesters or six quarters of undergraduate preparation, (c) adequate, appropriate undergraduate preparation, and (d) satisfactory performance on Graduate Record Exam.

If undergraduate deficiencies are present, students with a minimum cumulative GPA of 3.0 may be considered for admission as conditional graduate students upon application to the Graduate Division. This status can be changed to regular when all deficiencies are removed with at least a B average in all courses taken. Students with the best academic records and with limited or no undergraduate deficiencies will be considered for admission first.

Students who do not meet the general admission requirements or who have extensive undergraduate deficiencies may also choose to enroll as post-baccalaureate unclassified students until admission standards are met. Foreign students are not eligible for post-baccalaureate unclassified status. If an unclassified student completes the first 12 credit hours in SPA with a GPA of less than 3.0, no further registration will be permitted.

Each student will have a preliminary conference with an adviser prior to initial enrollment in courses. This evaluation will include a thorough analysis of previous academic preparation to determine the plan of study, including the removal of undergraduate deficiencies if they exist. Recommendations concerning admission to candidacy for fully qualified students will be made at the end of the first semester of study. The student's adviser will determine action to be taken in this regard. A general examination may be required upon completion of the first semester of study (minimum 12 credit hours).

Requirements

Both Plan A (thesis) and Plan B (non-thesis) are available for graduate study. The plan to be followed is determined by the student and his or her advisory committee. The decision is based upon the specific interests of the individual student and future educational and occupational objectives.

Under Plan A, 38 credit hours in course work, a thesis (SPA 700—6 credit hours), and a final oral examination on the thesis subject are required. Plan B requires satisfactory completion of 44 credit hours of course work, including SPA 695 or 696 in which a research study is completed. A seminar appearance is also required for Plan B. For both Plan A and Plan B, a final written comprehensive examination in which the student will be examined on his or her course of study is required.

The median time required for completion of this program by an individual admitted with no undergraduate deficiencies is two years.

Continued enrollment and completion of the master's program require both satisfactory academic progress to maintain minimum Graduate Division GPA standards and demonstrated clinical proficiency in clinical practicum in speech-language pathology and audiology.

Each classified and unclassified graduate student is personally responsible for knowing any additional information and regulations contained in the Catalog and the informational circular available through the Division of Speech Pathology and Audiology. If questions arise, the student's adviser should be consulted.

These programs are designed so that students who complete either Plan A or Plan B will meet the academic requirements for the Certificate of Clinical Competence in speech-language pathology, audiology, or both, as established by the American Speech-Language-Hearing Association (the national certifying authority). Students must complete all academic and practical training requirements for national certification, as well as departmental requirements, to qualify for the master's degree. Following graduation, students may qualify for national certification by taking and passing an examination in their area(s) and successfully completing a nine-month clinical fellowship in their area(s) of training. Upon certification (and, in most states, licensure), an individual may secure employment and/or engage in private practice in his or her area(s) of training.

Admission to courses requires graduate standing, except for certain senior students in their last semester of undergraduate study, and permission of the graduate chair. All graduate courses in the division require instructor's consent.

The Speech and Hearing Clinic is operated by the Division of Speech Pathology and Audiology of the John A. Burns School of Medicine. Staff members and supervised student clinicians provide diagnostic and therapeutic services without charge to children, University students, and other members of the community.

Surgery

University Tower, Queen's Medical Center
1356 Lusitana Street, 6th Floor
Honolulu, HI 96813
Tel: (808) 586-2920
Fax: (808) 536-1140

Faculty

L. M. F. Wong, MD (Interim Chair)—transplant surgery
A. H. S. Cheung, MD—transplant surgery
M. B. Ghows, MD—anesthesiology
P. Halford, MD—general surgery
T. J. Kane III, MD—orthopaedic surgery
W. M. L. Limm, MD—transplant surgery
S. Lozanoff, PhD—anatomy
J. Machi, MD, PhD—general surgery
J. J. McNamara, MD—cardiovascular and thoracic surgery
G. O. McPheeters, MD—general surgery
M. M. Mugiishi, MD—general surgery
R. H. Oishi, MD—general surgery
F. D. Parsa, MD—plastic surgery
E. C. Pohlson, MD—pediatric surgery
A. B. Richardson, MD—orthopaedic surgery
S. J. Steinemann, MD—general surgery/surgical intensive care
J. H. Wong, MD—surgical oncology
L. L. Wong, MD—transplant surgery
S. M. Yandow, MD—adult and pediatric orthopaedic surgery
M. Yu, MD—surgical intensive care

Degree Offered: MD

The Academic Program

Surgery (SURG) is the branch of medicine that deals with the use of manual or instrumental operations to treat disease, injury, or deformity.

The department provides instruction and training to medical students and residents in surgery and the subspecialties and involves research, etiology, diagnosis, pre- and post-operative care, and surgical techniques. It directs surgical and orthopaedic residency programs, as well as a surgical intensive-care fellowship program. It conducts and participates in continuing medical education programs for physicians and other health professionals. The program utilizes a large and varied faculty of general and specialty surgeons, as well as numerous local hospitals, giving students ample exposure to surgical disease and therapy.

Tropical Medicine and Medical Microbiology

Lē'ahi Hospital
3675 Kīlauea Avenue, 3rd Floor
Honolulu, HI 96816
Tel: (808) 732-1477
Fax: (808) 732-1483
E-mail: sandrac@hawaii.edu
Web: hawaiimed.hawaii.edu

Faculty

*K. Yamaga, PhD (Interim Chair)—immunological mechanisms of diseases
*S. P. Chang, PhD—immunology, molecular biology, molecular approaches to vaccine development
*A. R. Diwan, PhD—medical virology: chemotherapy, vaccines
W. L. Gosnell, PhD—host parasite interactions, malaria, TB immunology
*G. S. N. Hui, PhD—parasitology, immunology, cell biology
*K. J. Kramer, PhD—parasitology, epidemiology, leptospirosis, HIV serodiagnosis
*L. Tam, PhD—malaria and pox antigens, HIV serodiagnosis

Cooperating Graduate Faculty

R. D. Allen, PhD—ultrastructure and cell biology
M. E. Melish, MD—staphylococcal infection and toxins, clinical infectious disease, Kawasaki syndrome
V. R. Nerurkar, PhD—pathogenesis and etiology of infectious diseases, molecular virology and epidemiology
F. D. Pien, MD—clinical microbiology, diagnostic bacteriology and parasitology, efficacy of antimicrobial agents
R. C. Rudoy, MD—clinical aspects of viral and bacterial diseases
E. K. Tam, MD—inflammation, immunologic mechanisms of pulmonary diseases, genetic and environmental determinants of asthma

Degrees Offered: MS in biomedical science (tropical medicine), PhD in biomedical science (tropical medicine)

The Academic Program

Tropical medicine (TRMD) is the study of diseases that occur in the tropics. These are essentially the same diseases, with a few exceptions, that occur in other regions of the world. Some may be more common in the tropics than elsewhere; hence, they are referred to as "tropical diseases." The Department of Tropical Medicine and Medical Microbiology is devoted to the study of infectious diseases, with emphasis on those that occur in Hawai'i and other tropical regions, especially Southeast Asia and the Pacific Basin. Epidemiological and ecological investigations of specific diseases are conducted at least partially in the field. Studies on the infectious organisms themselves (culture, characterization, and molecular biology) and the diseases they cause (immunology, pathogenesis, diagnosis, prevention, and treatment) are mostly laboratory-based. An important aspect of the department's research effort

* Graduate Faculty

is the development of vaccines for the prevention of important tropical diseases (e.g., malaria).

The department is loosely arranged around four subdisciplines of medical microbiology: bacteriology, immunology, parasitology, and virology. However, there is a great deal of interaction and collaboration among the subdisciplines. Graduate students in tropical medicine may specialize in one of these fields, but all are expected to develop a basic knowledge of all aspects of infectious disease microbiology. The program offers students the opportunity to acquire a variety of experiences in a wide range of biological sciences (cell biology, biochemistry, epidemiology, molecular biology, biostatistics, etc.), as well as in their specific field of interest, along with vigorous training in scientific methodology. Such a program provides students with the background to take advantage of numerous professional options in the biological sciences. In this respect, the tropical medicine program provides learning opportunities in a range of biological disciplines available in few university departments.

Graduate Study

The department offers programs leading to the MS Plan A, MS Plan B, and PhD in tropical medicine, within the broader field of biomedical sciences, in the following areas of specialization: medical bacteriology, immunology, parasitology, and virology. The general purpose of the program is to prepare students for creative leadership in the field of tropical medicine.

Applicants to the program must meet established Graduate Division requirements and have a baccalaureate degree in biology or related fields. Other majors may be acceptable if applicants have sufficient strength in biological science courses. Candidates are expected to have completed one and a half years of course work in life sciences, including microbiology; two years in chemistry, including organic and biochemistry; one year in physics; and one year in mathematics, including calculus. Exceptional students who do not meet all the above requirements may be accepted on a probational basis at the discretion of the graduate committee of the department and the Graduate Division. Admission to candidacy for a graduate degree is contingent upon the applicant's satisfactorily completing the necessary courses to correct any deficiencies. Official scores of the GRE General Test and the subject test (biology) and two letters of recommendation are required of all applicants.

The MS and PhD degrees are recognized Western Intercollegiate Commission for Higher Education (WICHE) regional graduate programs. Residents of Alaska, Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, North Dakota, Oregon, Utah, Washington, and Wyoming are eligible, upon admission, to enroll at resident tuition rates.

Master's Degree

Graduates with a master's degree have gone on to careers in science education at the secondary and college level, technical and research positions in universities, government agencies and biotechnology companies, or have continued on in PhD and MD training programs at other universities.

Requirements

A minimum of 30 credit hours is required for master's Plan A and Plan B. For Plan A, students must complete 9 credit hours of thesis research and 21 credit hours in courses numbered 600–699. For Plan B, students must complete a minimum of 30 credit hours in courses numbered 600–699. A general examination, oral or written, is required before a student is advanced to candidacy for the MS degree. The final oral (Plan A) or oral and written (Plan B) examination, is given at least three weeks before the end of the term during which the degree is conferred. The student will be required to demonstrate a basic knowledge of the various fields of tropical medicine.

Doctoral Degree

Graduates with a PhD degree have pursued professional research, teaching, and administrative careers at various academic institutions, state and federal government agencies, international health agencies, and biotechnology companies.

Requirements

There are no course credit requirements for the doctoral degree. Nonetheless, candidates may be advised or required to enroll in courses if, in the opinion of their advisory committee, these courses are essential to preparation for the examinations required of all candidates. A reading knowledge of a foreign language considered by the department graduate committee to be pertinent to the student's area of interest is recommended but not required of a PhD candidate. Requirements consist of qualifying, comprehensive, and final examinations and a written dissertation. The purpose of a qualifying examination is to determine whether to encourage a student to proceed in a doctoral program and to assist the student in planning a program of study. Through a comprehensive examination the student must satisfactorily demonstrate to the members of the examination committee that he or she has a broad knowledge and basic understanding of tropical medicine in general and of the chosen minor fields. A final examination in defense of the dissertation is required of all PhD candidates.