

Biomedical and Translational Science

Sherrie H. Kaplan, Director

School of Medicine, 100 Theory Street, Suite 110

949-824-7286

ttp@uci.edu

<http://www.som.uci.edu/graduate-studies/education/ms-bats.asp>

Overview

The aim of the M.S.-BATS program is to train students in the conduct of high-quality multidisciplinary clinical research to facilitate the rapid transformation of basic knowledge to clinical medicine. The program is designed for students from varying levels of training, including medical students, residents, fellows, physicians, nurses, and others who are interested in conducting clinical research to maximize interdisciplinary communication and understanding sufficient to carry out high-quality clinical research. The dual degree MD/MS-BATS program is intended to integrate clinical research training skills with the medical school curriculum by allowing medical students to be enrolled in both degree programs concurrently. The program provides training in core competencies required to conduct clinical research including study design reflecting the breadth and complexity of clinical research applications, critical appraisal of multidisciplinary research literature, conduct and management of clinical research, medical statistics, research ethics, and the leadership of multidisciplinary research teams. Students who successfully complete the program receive the MS degree in Biomedical and Translational Science. Medical students receive two separate degrees and diplomas: An MS-BATS degree and an MD degree from the School of Medicine at the completion of School of Medicine work. The MS-BATS can be conferred before completion of the MD, or concurrently with the MD degree.

Faculty evaluate applicants to the program on the basis of grades, previous course work, letters of recommendation, MCAT or GRE scores, and other relevant qualifications. All graduate students, including those from public health, nursing science, and pharmaceutical science are eligible to apply, but the program has a highly clinical focus and is specifically designed for those with a sufficient background in clinical sciences. Applicants should have successfully completed a B.S. or equivalent, and may be current medical students, residents, clinical fellows, faculty, or licensed physicians in the community.

The M.S.-BATS program will initially offer training in Evidence-Based Medicine/Clinical Research, which will focus on the conduct and interpretation of clinical research, synthesis of clinical literature, and the assessment and improvement of quality of healthcare. Additional fields of emphasis will be added, including Molecular Medicine, focusing on the molecular mechanisms and molecular physiology of human disease and Population Medicine, focusing on the application of epidemiologic research and research methods and findings to clinical practice.

The M.S.-BATS program is a two-year curriculum. First-year students are required to enroll in core courses including Introduction to Clinical Epidemiology, Introduction to Medical Statistics, Design and Analysis of Clinical Trials, and Ethics in Clinical Research. Additional required courses include, Comparative Effectiveness Research, Health Politics and Policy, Measurement Science, Outcomes Research and Advanced Applied Methods, and Disparities in Health and Health Care. Optional additional courses include, Introduction to Medical Statistics II, and Quality, Efficiency, and Cost-effectiveness. Training during the second year emphasizes research and culminates in a written thesis. Throughout the program, students enroll in the BATS Seminar Series. By exception only, medical students and some students entering the program with advanced degrees, clinical research experience, or those who have previously completed the four core courses may be able to complete the program in less than two years.

Graduate Program in Biomedical And Translational Science

Faculty evaluate applicants to the program on the basis of grades, previous course work, letters of recommendation, MCAT or GRE scores, and other relevant qualifications. All graduate students, including those from public health, nursing science, and pharmaceutical science are eligible to apply, but the program has a highly clinical focus and is specifically designed for those with a sufficient background in clinical sciences. Applicants should have successfully completed a BS degree or equivalent, and may be current medical students, residents, clinical fellows, faculty, or licensed physicians in the community.

The MS-BATS program will initially offer training in Evidence-Based Medicine/Clinical Research, which will focus on the conduct and interpretation of clinical research, synthesis of clinical literature, and the assessment and improvement of quality of healthcare. Additional fields of emphasis will be added, including Molecular Medicine, focusing on the molecular mechanisms and molecular physiology of human disease and Population Medicine, focusing on the application of epidemiologic research and research methods and findings to clinical practice.

The MS-BATS program is a two-year curriculum. First-year students are required to enroll in core courses including Introduction to Clinical Epidemiology, Introduction to Medical Statistics, Design and Analysis of Clinical Trials, and Ethics in Clinical Research. Additional required courses include, Comparative Effectiveness Research, Health Politics and Policy, Measurement Science, Outcomes Research and Advanced Applied Methods, and Disparities in Health and Health Care. Optional additional courses include, Introduction to Medical Statistics II, and Quality, Efficiency, and Cost-effectiveness. Training during the second year emphasizes research and culminates in a written thesis. Throughout the program, students enroll in the BATS Seminar Series. By exception only, medical students and some students entering the program with advanced degrees, clinical research experience, or those who have previously completed the four core courses may be able to complete the program in less than two years.

Courses

BATS 209A. Introduction to Medical Statistics. 4 Units.

Provides understanding of medical statistics for clinicians and clinical researchers to read and interpret literature.

BATS 209B. Introduction to Medical Statistics II. 4 Units.

Provides sufficient understanding of medical statistics to read and interpret medical literature critically, identify appropriate statistics for basic research designs used in medicine, and discriminate between appropriate and inappropriate statistical applications for common research designs.

Prerequisite: BATS 209A

BATS 210A. Introduction to Clinical Epidemiology. 4 Units.

Introduces principles and practice of clinical epidemiology and the population-based approach to health and disease.

Prerequisite: BATS 209A or STATS 250

BATS 232. Design and Analysis of Clinical Trials. 4 Units.

Presents history, organization and planning, rationale for methods, limits, and ethics in conducting clinical trials.

Prerequisite: BATS 209A or STATS 250

BATS 245A. Comparative Effectiveness Research I. 4 Units.

Two-part course designed to provide a comprehensive overview of comparative effectiveness research (CER) with in-depth methodologic clinical practice and policy/dissemination issues related to the conduct, interpretation, and clinical applications of CER.

BATS 245B. Comparative Effectiveness Research II. 4 Units.

Two-part course designed to provide a comprehensive overview of comparative effectiveness research (CER) with in-depth methodologic clinical practice and policy/dissemination issues related to the conduct, interpretation, and clinical applications of CER.

Prerequisite: BATS 245A

BATS 247. Measurement Science, Outcomes Research and Advanced Applied Methods. 4 Units.

Further the understanding of methodologic issues involved in the conduct of comparative effectiveness research (CER). Topics: risk adjustment, balancing observational study designs, use of outcomes from multiple data sources, innovations clinical trial designs, the conduct of meta-analysis, and psychometric methods.

BATS 251. Research in Quality and Safety. 4 Units.

Introduces the principles and practice of quality of care, patient safety and patient experience research, along with major national and statewide policy and legislative initiatives related to quality of care and patient safety.

BATS 253. Disparities in Health and Health Care. 4 Units.

Review all aspects of culture that influence health status, development of public health policy, and management and practice of health care. Explores how race and ethnicity affect health and health care, including health care services and policies governing these services.

BATS 255. Health Politics and Policy. 4 Units.

Offers political and analytical insights into understanding the U.S. health policymaking and developing strategies that influence health policy outcomes.

BATS 257. Laboratory in Big Data Analysis for Health Services and Clinical Researchers. 4 Units.

Introduces quantitative research methods, with an emphasis on large surveys and administrative health data sets. Presents the advantages and disadvantages of these data sources and the iterative process of formulating research questions and identifying data sources to answer these questions.

Prerequisite: BATS 209A

Restriction: Graduate students only. Biomedical/Translational Sci Majors only.

BATS 280. Biomedical and Translational Science Seminar. 2 Units.

Students present their current research or a topic of interest and are exposed to diverse projects in the biomedical and translational science arena.

Repeatability: May be repeated for credit unlimited times.

BATS 295. Master's Thesis Research and Writing. 2-12 Units.

Master's thesis research and writing with Biomedical and Translational Science faculty.

Repeatability: May be repeated for credit unlimited times.

BATS 296. Ethics in Clinical Research. 4 Units.

Covers major frameworks and concepts of ethics in public health research as well as human subject protection issues.

BATS 299. Independent Directed Research. 2-12 Units.

Independent research with Biomedical and Translational Science faculty.

Repeatability: May be repeated for credit unlimited times.