

Biomedical and Translational Science, M.S.

Dan Cooper, M.D., Director

Eric Villain, M.D., Ph.D., Director

dcooper@hs.uci.edu (<http://catalogue.uci.edu/mail:dcooper@hs.uci.edu>)

<https://medschool.uci.edu/education/medical-education/dual-degree-programs/dual-degree-mdms-bats> (<https://medschool.uci.edu/education/medical-education/dual-degree-programs/dual-degree-mdms-bats/>)

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 M.D./M.S.-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 M.S. degree in Biomedical and Translational Science. Medical students receive two separate degrees and diplomas: An M.S.-BATS degree and an M.D. degree from the School of Medicine at the completion of School of Medicine work. The M.S.-BATS can be conferred before completion of the M.D., or concurrently with the M.D. degree.

Faculty evaluate applicants to the program on the basis of grades, previous course work, letters of recommendation, 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 may be added, per the individual needs of the student, 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 one-year curriculum. Students are required to enroll in core courses including Pathways in Biomedical and Translational Science, Introduction to Medical Statistics, Design and Analysis of Clinical Trials, and Ethics in Clinical Research. Examples of additional elective courses include Introduction to Clinical Epidemiology, Comparative Effectiveness Research; Health Politics and Policy; Measurement Science; Outcomes Research and Advanced Applied Methods; Disparities in Health and Health Care; Introduction to Medical Statistics II; Science Communication Skills for Clinical and Translational Scientists, and Quality, Efficiency, and Cost-effectiveness. The program culminates in a capstone project or written thesis. Throughout the program, students enroll in the BATS Seminar Series.

The MS-BATS admissions committee will evaluate applicants to the program on the basis of grades, previous course work, letters of recommendation, and other relevant qualifications, such as years of experience working in a clinical setting. The GRE is not a requirement for the program. 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. degree or equivalent, and may be current medical students, residents, clinical fellows, faculty, or licensed physicians in the community.

Graduate Program in Biomedical And Translational Science

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Courses

BATS 201. Pathways in Biomedical and Translational Science. 4 Units.

Provides fundamental knowledge to promote understanding of the process of bringing discoveries to the bedside and then to the population, providing a fundamental basis for clinical and translational science.

Restriction: Graduate students only.

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

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

Restriction: Graduate students only.

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 209A with a grade of B- or better

Restriction: Graduate students only.

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

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

Restriction: Graduate students only.

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.

Restriction: Graduate students only.

BATS 240. Science Communication Skills for Clinical and Translational Scientists. 4 Units.

Designed to train clinical and translational researchers to communicate their research effectively to expert audiences and community members, and creates opportunities for training in scientific writing, presenting scientific talks, or doing job interviews. Recommended elective for all MS-BATS students.

Restriction: Graduate students only.

BATS 241. Understanding the Pathobiology and Clinical Treatment of Skin Diseases. 3 Units.

Provides participants with the clinical presentation, biology, and treatment of skin disease. At the completion of the course, attendees are able to identify gaps in research and clinical care of skin diseases.

Restriction: Graduate students only.

BATS 242. Basic Science of the Skin. 3 Units.

Provides participants with a basic understanding of the structure and function of skin and the latest advances in skin biology.

Restriction: Graduate students only.

BATS 245A. Comparative Effectiveness Research . 4 Units.

Provides 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.

Restriction: Graduate students only.

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

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

Restriction: Graduate students only.

BATS 251. Quality Efficiency and Cost Effectiveness. 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.

Restriction: Graduate students only.

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

Reviews 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.

Restriction: Graduate students only.

BATS 255. Health Politics and Policy. 4 Units.

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

Restriction: Graduate students 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 taken for credit for 12 units.

Restriction: Graduate students only.

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.

Restriction: Graduate students only.

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

Independent research with Biomedical and Translational Science faculty. Capstone option for students who do not choose the thesis option.

Repeatability: May be taken for credit for 12 units.

Restriction: Graduate students only.