Translational Biomedicine, MS

Requirements

The Master of Science program in translational biomedicine (TBM) requires a minimum of 34 s.h. of graduate credit plus a final project. Students must maintain a UI cumulative graduate program grade-point average of at least 3.00. The plan of study for students in the two-year program is tailored to their scientific goals and interests.

The program is designed to teach members of scientific teams how to move biomedical discoveries into clinical applications and beyond. It is tailored for individuals who have completed doctoral-level training in one area of biomedicine and wish to apply their expertise to the translational research spectrum. The program admits individuals who hold medical or graduate degrees (e.g., MD, DO, DDS, DNP, PhD, PharmD, DVM, or the equivalent) and are employed by the University of Iowa at the faculty ranks of associate professor, assistant professor, instructor/associate, fellow physician, or postdoctoral scholar/fellow.

The MS in translational biomedicine requires the following coursework.

Core Courses

Course #	Title	Hours
All of these:		
TBM:5000	Translational Biomedical Research	9
TBM:5001	Introduction to Translational Biomedicine	3
TBM:5002	Critical Thinking and Communication: Study Design and Commercialization	1
TBM:5003	Critical Thinking and Communication: Scientific Writing and Presentation Strategies	1
TBM:5004	Critical Thinking and Communication: Career Development and the Funding Process	1
TBM:5005	Critical Thinking and Communication: Leadership, Team Science, and Community Engagement	1
BIOS:4120	Introduction to Biostatistics	3
BIOS:5120	Regression Modeling and ANOVA in the Health Sciences	3
EPID:4400	Epidemiology I: Principles	3
EPID:6950	Clinical Research Ethics	2

Electives

Students must earn a minimum of 6 s.h. in graduate-level elective coursework pertinent to their educational goals. Electives may be selected from the following lists, or students may obtain approval for other courses with program administration approval.

Biostatistics

Course #	Title	Hours
BIOS:5130	Applied Categorical Data Analysis	3
BIOS:5310	Research Data Management	3
BIOS:6210	Applied Survival Analysis	3
BIOS:6310	Introductory Longitudinal Data Analysis	3
BIOS:7600	Advanced Biostatistics Seminar	0-3

Device Development

Course #	Title	Hours
BME:5101	Biomaterials and Implant Design	3

Drug Discovery

Course #	Title	Hours
PCOL:5135	Principles of Pharmacology	1
PCOL:5136	Pharmacogenetics and Pharmacogenomics	1
PCOL:6203	Pharmacology for Graduate Students	5
PCOL:6250	Advanced Problem Solving in Pharmacological Sciences	1
PHAR:5512	Drug Discovery and Mechanisms	3

Epidemiology

Course #	Title	Hours
EPID:5214	Meta-Analysis of Epidemiologic Studies	3
EPID:5500	Introduction to Clinical Epidemiology	3
EPID:5560	Biomarkers in Epidemiology	3
EPID:5610	Intermediate Epidemiology Data Analysis With SAS and R	3
EPID:6400	Epidemiology II: Advanced Methods	4
EPID:6900	Design of Intervention and Clinical Trials	3

Genetics

Course #	Title	Hours
ACB:6200	Current Topics in Genetics	1
BIOL:3373	Human Population Genetics and Variation	3
BIOL:3713	Molecular Genetics	4
BIOL:5412	Fundamental Genetics: Graduate Lecture	3
GENE:6150	Genetic Analysis of Biological Systems	3
GENE:7191	Human Molecular Genetics	3
MMED:6250	Mechanisms of Parasitism Journal Club	1

PCOL:5136	Pharmacogenetics and Pharmacogenomics	1

Informatics

Course #	Title	Hours
BIOL:4213	Bioinformatics	2,4
BIOL:4386	Introduction to Scientific Computing for Biologists	3
CS:5110	Introduction to Informatics	3
IGPI:3314	Genomics	3

Innovation

Course #	Title	Hours
ENTR:2000	Entrepreneurship and Innovation	3
MED:8073	Biomedical Innovation	1
NURS:6553	Seminar on Innovations	4

Neuroscience

Course #	Title	Hours
BIOL:2753	Introduction to Neurobiology	3
NSCI:5212	Foundations in Behavioral and Cognitive Neuroscience	4
NSCI:5653	Fundamental Neurobiology I	3
PSY:6370	Principles of Neuropsychology	3

Final Project

In addition to completion of the 34 s.h. in required coursework, scholars must submit a final project. The project may be in one of the following formats.

- A complete grant application for a K01, K08, K23, R01, R03, R21, a U.S. Department of Veterans Affairs career development award, or the equivalent. The R03 completed as part of the required grant writing course may not be submitted as the final project.
- An original research manuscript that is of acceptable quality for a peer-reviewed biomedical journal (the paper can be ready for submission, under review, or already published). The manuscript must contain the following components: a structured abstract; an introductory section that adequately frames the research question addressed; and a methodology section that sufficiently describes the following elements (study design, study sample, data collection strategies and sources, data elements, and data analysis), results of the study, and a discussion including a description of the relationship of the current findings to prior relevant research and/or policy implications of the findings and methodological limitations.