

PROGRAMS & DEGREE REQUIREMENTS



MCW

GRADUATE SCHOOL

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CERTIFICATES



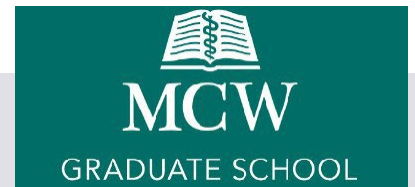
MCW

GRADUATE SCHOOL

2026-27

CLINICAL & TRANSLATIONAL SCIENCE

Certificate



Program Description

The Clinical and Translational Science Institute (CTSI) offers three (3) Graduate Certificates in addition to the Master's in Clinical and Translational Science. The certificate program is designed for individuals who want additional training but may not want to pursue a full master's degree and for those who have already completed professional clinical training but would like additional training in clinical and translational research.

Certificate students are required to select from one of three emphasis tracks. Typically, students will take 2 courses in the Fall and 2 courses in the Spring. The certificate is designed to be completed within one (1) academic year, and students have up to two (2) calendar years to complete all requirements. The courses identified for each emphasis track are below.

Students completing the Certificate will also be able to transfer their 12 credits into the Master's in CTS degree. Students wishing to take this route will need to apply to the Master's program prior to the application deadline and will be able to begin in the fall of the following academic year.

Admission Requirements

[Graduate School admission requirements.](#)

Credits Required to Graduate

12 credits

Fields of Study

Certificate students will select from one of the three emphasis tracks and complete 4 classes, or 12 credits. The emphasis tracks include Translational Science, Population Science, and Health Systems Science.

Translational Science

This track is focused on the foundational principles of the translational process. This "bench-to-bedside" process involves moving discoveries from their basic foundation to clinical settings. Discoveries of focus include diagnostics, therapeutics, medical procedures, and other interventions. Suggested electives for this program include Translational Genomics and Survey of Biomedical Engineering.

Population Science

There are a variety of factors that can influence health outcomes at a population level, and this track will focus on the relationship between these factors, health, and research. This program will focus on factors such as socioeconomic status, health disparities, social determinants of health, healthcare systems, environment, and policies. Suggested electives include Health Economics, Introduction to Statistics using Stata, Regression using Stata, and Health and Medical Geography.

Health System Science

The focus of this track is on principles and processes within the healthcare system. The topics of focus will include delivery of healthcare, how healthcare professionals work together, and improvements that can be made within the system to improve healthcare delivery. Suggested electives for this program include Health Economics, Health and Medical Geography, Dissemination and Implementation Science, and Qualitative and Mixed Methods.

Non-Course Requirements

Application for Graduation in MCWconnect

Required Courses

CTSI 20101 Introduction to Clinical and Translational Science. 3 credits.

CTSI 20160 Foundations in Health Services Research. 3 credits.

CTSI 20220 Clinical Statistics I. 3 credits.

Electives. 3 credits. *(Review suggested electives below. Alternate Electives approved by Program)*

Suggested Elective Courses

CTSI 20241 Translational Genomics. 3 Credits.

CTSI 20253 Methods in Grant Preparation. 3 Credits.

CTSI 20260 Introduction to Dissemination and Implementation Science. 3 credits.

GLHE 29150 Global Environmental Health. 3 Credits.

GLHE 29275 Global Health Consulting and Research Methods. 3 Credits.

PRME 42145 Omics Technology in Precision Medicine. 3 Credits.

PRME 42170 Medical Genetics, Undiagnosed, and Rare Diseases

PRME 42175 Pharmacogenomics for Precision Medicine. 3 Credits.

PRME 42185 Cancer Precision Medicine. 3 Credits.

PUCH 19210 Health and Medical Geography. 3 Credits.

PUCH 19235 Data Management and Use for Public and Community Health. 3 Credits.

PUCH 19260 Implementation Research Methods. 3 Credits.

PUCH 19280 Advanced Program Evaluation for Public Health

Course Descriptions

View the [Graduate School Course Catalog](#) for course descriptions.

2026-27

CLINICAL BIOETHICS

Degree Offered: Certificate



Program Description

The Certificate in Clinical Bioethics program is designed to provide a foundational introduction to the philosophical, legal, and clinical foundations of health care ethics. Specifically designed to enhance the clinical practice of health care professionals or to provide a foundation for further study of bioethics for professionals and students in any discipline, the Certificate program is offered in an accessible online format.

Admission Requirements

[Graduate School admission requirements.](#)

Credits Required to Graduate

12 credits

Non-Course Requirements

Graduation Application Requirement

Program Credit Requirements

All courses of the Certificate program are delivered in an online format. The pedagogical capabilities of the online environment enhance the course discussions and allow for more individualized instructor feedback, making the courses truly student-centered.

Students receive a Certificate in Clinical Bioethics from the Medical College of Wisconsin's Graduate School of Biomedical Sciences upon completion of all four courses. Graduate credits accumulated in this program may be applicable toward the Master of Arts degree at the Medical College of Wisconsin.

Required Courses

BIOE 10209 Clinical Topics in Bioethics. 3 credits.

BIOE 10210 Philosophical Bioethics. 3 credits.

BIOE 10223 Law and Bioethics. 3 credits.

Elective. 3 credits. (Review elective options below)

Elective Courses

BIOE 10203 Justice and Healthcare. 3 credits.

BIOE 10207 Introduction to Research Ethics. 3 credits.

BIOE 10233 Issues in Pediatric Ethics. 3 credits.

BIOE 10234 Ethics and Human Reproduction. 3 credits.

BIOE 10240 History and Meaning of Ethics and Professionalism in Medicine. 3 credits.

BIOE 10275 Special Topics in Bioethics. 3 credits.

Course Descriptions

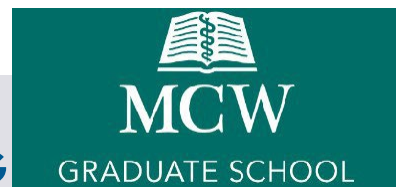
View the [Graduate School Course Catalog](#) for course descriptions.

Contact information: gradschool@mcw.edu | (414) 955-8218

2026-27

COMMUNITY HEALTH ASSESSMENT AND PLANNING

Certificate



Program Description

This certificate is offered completely online, allowing working professionals the flexibility to fulfill their educational goals. The program focuses on individuals who have responsibility and accountability for the health of the populations they serve. This certificate will provide the training to competently assess, plan for improvement, and monitor the health of various populations. Coursework consists of two required courses and two elective courses for a total of 12 credits. All credits offered in the certificate program may be transferable to the Master of Public Health program within one year of certificate completion.

Admission Requirements

In addition to the general [Graduate School admission requirements](#), this program has additional specific requirements.

One to two years of experience working in health care, worksite wellness, or public health strongly recommended.

Credits Required to Graduate

12 credits

Non-Course Requirements

Application for Graduation in MCWconnect

Required Courses

PUBH 18209 Community Health Assessment and Improvement. 3 credits.

PUBH 18230 Community Health Program Planning. 3 credits.

Electives. 6 credits. (*Elective options below*)

Elective Courses

PUBH 18115 Health Promotion and Disease Prevention. 3 credits.

PUBH 18160 Racial and Ethnic Inequalities in Health. 3 credits.

PUBH 18223 Public Health Policy. 3 credits.

PUBH 18241 Health Communication. 3 credits.

PUBH 18260 Community Health Program Evaluation. 3 credits.

PUBH 18268 Leadership for the Public's Health. 3 credits.

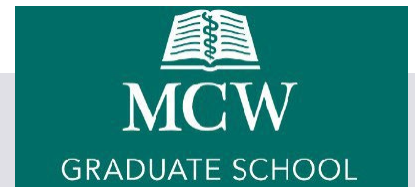
Course Descriptions

View the [Graduate School Course Catalog](#) for course descriptions.

2026-27

GLOBAL HEALTH EQUITY

Certificate



Program Description

The Certificate in Global Health Equity is designed to provide students with a strong foundation in core global health concepts while offering the flexibility to pursue elective courses aligned with their specific interests. The program explores global health inequities through the lens of individuals, communities and organizations working to implement effective, real-world solutions.

There is a growing need for global health professionals who understand and can serve global populations within local communities in the United States. This certificate prepares students to be culturally competent, globally aware practitioners who recognize and respect the unique determinants, perspectives and experiences that different cultures contribute to health and healthcare.

Admission Requirements

[Graduate School admission requirements.](#)

Credits Required to Graduate

12 credits

Non-Course Requirements

Application for Graduation in MCWconnect

Required Courses

GLHE 29219 Introduction to Global Health Equity. *3 credits.*

GLHE 29239 Ethics and Global Health. *3 credits.*

Electives. *6 credits.* (Review suggested electives below. Alternate Electives Approved by Program Director)

Elective Courses

GLHE 29100 Community Health Needs Assessment. *2 credits.*

GLHE 29110 Introduction to Chronic Diseases in Global Health. *2 credits.*

GLHE 29160 Infectious Disease Epidemiology. *2 credits.*

GLHE 29165 Ethics in Qualitative Research. *2 credits.*

GLHE 29232 Interprofessional Foundations of Public Health research methods. *3 credits.*

GLHE 29235 Fragile Lives: Understanding Vulnerability in Old Age. *2 credits.*

GLHE 29237 Global Health Issues: Moving from Evidence to Impact. *3 credits.*

GLHE 29238 Global Health Initiatives. *2 credits.*

GLHE 29240 Multicultural Mental Health Guidelines in Native American Populations. *3 credits.*

GLHE 29242 Planetary Health. *3 credits.*

GLHE 29245 Health and Forced Migration. *2 credits.*

GLHE 29250 How to Build Health Research Partnerships with Native American Communities. *2 credits.*

GLHE 29275 Global Health Consulting and Research Methods. 3 *credits*.
GLHE 29280 Career Development. 1 *credit*.
GLHE 29325 Global Maternal and Child Health. 2 *credits*.
GLHE 29236 Digital Storytelling for Public Health. 1 *credit*.
GLHE 29220 Statistics for Global Health. 2 *credits*.

Electives offered online through other MCW Programs:

PUBH 18160 Racial and Ethnic Inequalities in Health. 3 *credits*.

Electives offered in-person at MCW:

PUCH 19152 Global Environmental Health. 3 *credits*.

Course Descriptions

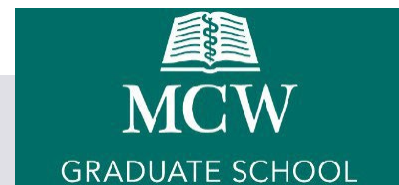
View the [Graduate School Course Catalog](#) for course descriptions.

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2026-27

POPULATION HEALTH MANAGEMENT

Certificate



Program Description

This certificate is offered completely online, allowing working professionals the flexibility to fulfill their educational goals. Through innovative online learning technologies promoting communication with faculty and fellow students, this program prepares individuals with the knowledge and skills to apply and achieve the concept of the “quadruple aim” of improved population health outcomes, better patient, and provider experiences, and reduced per person costs. Coursework consists of two required courses and two elective courses for a total of 12 credits. All credits offered in the certificate program may be transferable to the Master of Public Health program within one year of certificate completion. Experience working in a health care system, health plan, employer benefit plan, or public health department recommended.

Admission Requirements

[Graduate School admission requirements.](#)

Credits Required to Graduate

12 credits

Non-Course Requirements

Application for Graduation in MCWconnect

Required Courses

PUBH 18232 Population Health Management. 3 credits.

Electives. 9 credits. *(Elective options below)*

Elective Courses

PUBH 18101 Foundations of Public Health. 3 credits.

PUBH 18115 Health Promotion and Disease Prevention. 3 credits.

PUBH 18150 Public Health Law and Ethics. 3 credits.

PUBH 18155 Public Health Theory & Practice. 3 credits.

PUBH 18160 Racial and Ethnic Inequalities in Health. 3 credits.

PUBH 18165 Principles of Public Health Data and Epidemiology. 3 credits.

PUBH 18204 Public Health Analytics. 3 credits.

PUBH 18209 Community Health Assessment and Improvement. 3 credits.

PUBH 18215 Infectious Diseases. 3 credits.

PUBH 18223 Public Health Policy. 3 credits.

PUBH 18230 Community Health Program Planning. 3 credits.

PUBH 18241 Health Communication. 3 credits.

PUBH 18260 Community Health Program Evaluation. 3 credits.

PUBH 18268 Leadership for the Public's Health. 3 credits.

Course Descriptions

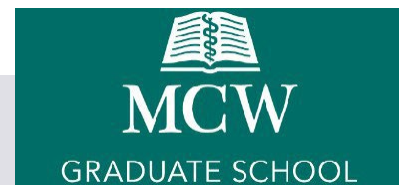
View the [Graduate School Course Catalog](#) for course descriptions.

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2026-27

PRECISION MEDICINE

Degree Offered: Certificate



Program Description

The Precision Medicine Education program based in the Medical College of Wisconsin Institute for Health & Humanity in partnership with the Mellowes Center for Precision Medicine and Genomic Medicine offers a fully online learning experience toward a 12- credit Graduate Certificate in Precision Medicine (PM). Participants in the program will advance their knowledge, skills, practices, and competencies in PM. Learners may also enroll in courses as non-degree-seeking.

Admission Requirements

[Graduate School admission requirements.](#)

Credits Required to Graduate

12 credits

Non-Course Requirements

Application for Graduation in MCWconnect

Required Courses

PRME 42100 Introduction to Precision Medicine. 3 *credits*.

Electives. 9 *credits*. (Review elective options below)

Suggested Elective Courses

PRME 42145 Omics Technology in Precision Medicine. 3 *credits*.

PRME 42170 Medical Genetics, Undiagnosed, and Rare Diseases. 3 *credits*.

PRME 42175 Pharmacogenomics for Precision Medicine. 3 *credits*.

PRME 42185 Cancer Precision Medicine. 3 *credits*.

CTSI 20241 Translational Genomics. 3 *credits*.

GECO 40110 Bioethics in Precision Medicine. 3 *credits*.

GLHE 29232 Interprofessional Foundations of Public Health research methods. 3 *credits*.

INBS 16270 Integrated Microbiology and Immunology. 3 *credits*.

PUBH 18203 Public Health Administration. 3 *credits*.

PUBH 18223 Public Health Policy. 3 *credits*.

PUBH 18232 Introduction to Population Health Management. 3 *credits*.

Elective offered through UW-Milwaukee:

[HI-700 Introduction to Health Care Informatics](#). 3 *credits*.

Elective offered through MCW/Marquette University:

[BIIN 17150 Bioinformatics of Systems Biology](#). 3 *credits*.

Course Descriptions

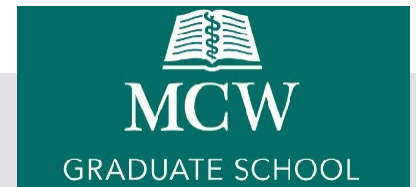
View the [Graduate School Course Catalog](#) for course descriptions.

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2026-27

PUBLIC HEALTH

Degree Offered: Certificate



Program Description

This completely online program is designed for individuals interested in pursuing or further developing a career in public health. Coursework consists of four major disciplines of public health (12 credits). All credits offered in the certificate program may be transferable to the Master of Public Health program within one year of certificate completion.

Admission Requirements

[Graduate School admission requirements.](#)

Credits Required to Graduate

12 credits

Non-Course Requirements

Application for Graduation in MCWconnect

Required Courses

PUBH 18155 Public Health Theory & Practice. *3 credits.*

PUBH 18165 Principles of Public Health Data and Epidemiology. *3 credits.*

PUBH 18203 Public Health Administration. *3 credits.*

PUBH 18204 Public Health Analytics. *3 credits.*

Course Descriptions

View the [Graduate School Course Catalog](#) for course descriptions.

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CONCENTRATION



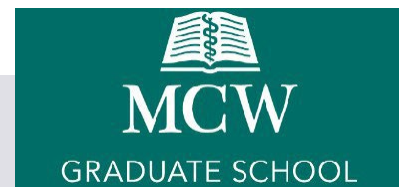
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GRADUATE SCHOOL

2026-27

BASIC & TRANSLATIONAL SCIENCE

Concentration



Program Description

The program builds on a strong foundation of core basic science knowledge and develops competencies associated with successful scientific innovation and research in a multidisciplinary collaborative learning environment. In this program, students are trained to think broadly about the clinical applications of the basic sciences and to carry out research bridging the gap between basic science and clinical practice. Students will come into graduate school through the [Interdisciplinary Program in Biomedical Sciences \(IDP\)](#), [Neurosciences Doctoral Program](#), [Physiology Graduate Program](#), [Biomedical Engineering Program](#) or [Biophysics Graduate Program in Imaging](#).

Admission Requirements

Basic Science PhD seekers who are in good academic standing may express interest in the program near the end of the first year when a basic science mentor is chosen. Students must complete a concentration specific [application](#) along with a mentor support form to apply for the Basic and Translational Science Concentration.

Credits Required

5 credits

Required Courses

BTSI 21150 Boundaries of Science and Medical Practice. *1 credit.*

BTSI 21301 Basic and Translational Science Seminar. *0.5 credits per seminar, 4 credits total.*

Optional Elective Course

BTSI 21285 Independent Study. *0.5-1 credit.*

Course Descriptions

View the [Graduate School Course Catalog](#) for course descriptions.

Contact information: gradschool@mcw.edu | (414) 955-8218

DOCTORAL PROGRAMS



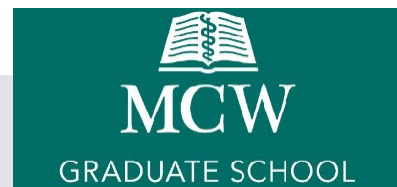
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GRADUATE SCHOOL

2026-27

BIOCHEMISTRY

Degree Offered: Doctor of Philosophy



Program Description

As a member of the Biochemistry PhD program at MCW you will have the opportunity to investigate the mechanistic basis of diseases including cancer, neurodegeneration, heart failure, diabetes and others, using state-of-the-art facilities and instrumentation for structural biology, metabolism, signal transduction, and drug discovery.

Admission Requirements

[Graduate School admission requirements.](#)

Admission to the Biochemistry Graduate Program is through the [Interdisciplinary Program in Biomedical Sciences \(IDP\)](#), [Neuroscience Doctoral Program \(NDP\)](#), or [Medical Scientist Training Program \(MSTP\)](#). After completion of the first-year curriculum of that program, students who choose to complete their dissertation research project with faculty of the Biochemistry Graduate Program will have the opportunity to continue their graduate studies by selecting from among a wide range of courses that are offered within the Biochemistry Graduate Program as well as other programs at MCW. Courses to be taken are based on the students' interest in consultation with the student's dissertation advisor and committee.

Fields of Study

The following areas of research are available in the department:

- Post-translational modifications (PTMs), including cysteine modifications on scavenger receptors and their role in regulating receptor function
- Mass spectrometry-based approaches, including proteomics, lipidomics, metabolomics, and multi-omics integration
- Lipid metabolism, oxidative stress, and redox biology, including reactive oxygen and nitrogen species and lipid peroxidation
- Mitochondrial function, mitochondrial homeostasis, and immunometabolism
- Protein dynamics and protein-protein interactions characterized using solution NMR and complementary biophysical techniques
- Structural biology and structural proteomics, with emphasis on immunological signaling molecules
- Mechanisms of cell cycle regulation, cytokine signaling, and leukocyte biology
- Diabetes, β -cell biology, inflammation, innate immunity, and cell fate decisions
- Inflammatory signaling and transcriptional mechanisms distinguishing tissue injury from immune activation
- Chromatin organization and accessibility, including nucleosome dynamics, histone variants, and PTMs
- Metabolic regulation of chromatin through lysine acetylation and other acylation modifications
- Cancer biology, including cell signaling, tumor initiation and progression, and therapeutic resistance
- RAS/MAPK signaling networks and their roles in oncogenesis and growth regulation
- Systems biology, computational modeling, and cancer genomics to understand tumor

behavior and treatment responses

- Precision oncology approaches integrating biomarkers and genomic data for personalized therapies
- Mechanisms of oxidative apoptosis and cellular stress responses
- Druggability and therapeutic targeting of proteins involved in mitochondrial and cellular homeostasis
- Genetic variation and disease mechanisms, including genotype-to-phenotype relationships
- Integrative modeling and team science approaches to define genetic diseases
- Epigenetic regulation and genetic modulation of chromatin-modifying enzymes across health and disease
- Nutrient utilization and metabolic regulation in metabolic syndrome, atherosclerosis, and inherited metabolic disorders
- Developmental and cardiovascular gene regulation in vivo
- Heme protein biology, including interactions with the cytoskeleton, mitochondria, and RNA-regulatory complexes
- Redox and calcium signaling in cardiac physiology and atrial fibrillation
- Maternal-fetal biology, including metabolomics, pregnancy, placental function, and maternal-infant health
- Endocrine regulation of metabolism and hormonal disorders, including gestational diabetes and pituitary function
- Glycosylation, intracellular signaling, and carbohydrate-mediated regulation in development and disease
- Hematopoiesis and carbohydrate signaling, including sialylated glycans
- Cell adhesion biology, including integrin signaling in thrombosis and inflammation
- Immune responses to mitochondrial stress in autoimmune, neurodegenerative, and oncologic contexts
- Chemical biology of epigenetic regulation in cancer and metabolic disease
- RNA therapeutics for hematologic diseases
- ESCRT machinery and cytokinesis, investigated through structure-function and biophysical approaches
- Cell cycle checkpoints and their regulation by post-translational modifications
- G protein-coupled receptor (GPCR) signaling in health and disease
- Study the roles of ADAMTS metalloproteases (e.g., ADAMTS13 and ADAMTS7) in vascular biology, thrombosis, and disease pathophysiology.

Credits Required to Graduate

60 credits minimum

Non-Course Requirements

- [Preliminary Requirements](#)
 - Qualifying Exam
 - Committee Approval
 - Dissertation Proposal Approval
- Program Specific Requirement(s)
 - Students are expected to publish two (2) or more peer-reviewed, first-authored manuscripts with a minimum of at least one accepted at the time of graduation
- Application for Graduation in MCWconnect
- [Degree Completion Requirements](#)

Required Courses

BIOE 10222 Ethics and Integrity in Science. *1 credit.*

BIOE 10444 Research Ethics Discussion Series. *1 credit.*

INBS 16293 Writing Individual Fellowship. *2 credits.* (Required for MSTP students only)

BIOC 02295 Reading and Research. (Variable 1-9 credits taken each term)

BIOC 02301 Seminar. *1 credit.* (1 credit taken each fall and spring terms)

BIOC 02399 Doctoral Dissertation. *9 credits.* (Take in final term)

Course Descriptions

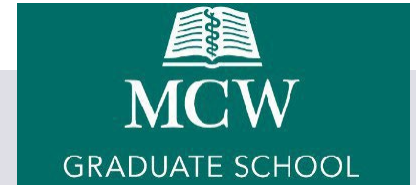
View the [Graduate School Course Catalog](#) for course descriptions.

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2026-27

BIOMEDICAL ENGINEERING

Degree Offered: Doctor of Philosophy in partnership with Marquette University



Program Description

Biomedical Engineering (BME) is an interdisciplinary field that is based on the application of engineering principles and experimental and analytical techniques to the development of biologics, materials, devices, implants, processes, and systems that advance biology and medicine and improve medical practice and health care.

The Doctor of Philosophy (PhD) degree in BME is a research degree that is intended to provide the graduate with the breadth and depth of knowledge in one area of specialization within BME, as well as the scientific research training needed for successful careers in academia, biomedical industry, or government. The research training process begins with the student working closely with his or her Dissertation Director and participating in his or her research program. Building on these experiences, the student begins to conduct independent research that eventually leads to an original contribution to the BME field.

Admission Requirements

In addition to the general [Graduate School admission requirements](#), this program has additional specific requirements.

Graduates of accredited colleges or universities with a Bachelor's or Master's degree in various engineering, physical science, or life science disciplines or equivalent are eligible for admission to the joint MU-MCW PhD Program in BME.

Students who do not have an engineering degree are admitted into the PhD program on a conditional status based on successful completion (grade of B or better) of a sequence of leveling courses. These courses will provide them with fundamental engineering principles and analytical skills needed for successful completion of the PhD degree in BME. See the [Handbook of MU-MCW PhD Program in BME](#) for details.

Fields of Study

- Biomechanics & Rehabilitation Bioengineering
- Biomedical Imaging
- Computational Systems Biology & Medicine
- Medical Devices & Bioinstrumentation
- Molecular, Cellular & Tissue Engineering
- Neural Engineering & Neurorehabilitation

Credits Required to Graduate

60 credits minimum

Non-Course Requirements

- [Preliminary Requirements](#)

- o Qualifying Exam
- o Committee Approval
- o Dissertation Proposal Approval
- Application for Graduation in MCWconnect
- [Degree Completion Requirements](#)

Program Credit Requirements

Upon enrolling in the doctoral program in BME, a student selects his or her area of specialization. Faculty designs a curriculum and research program to address the specific goals of each student. Program includes course work in engineering, biology, mathematics, and medicine, all of which are integrated with research laboratory experience.

The Doctoral Qualifying Examination (DQE) consists of both written and oral components. Students entering the doctoral program with a master's degree are recommended to take the DQE at or before the completion of 15 graduate credits of didactic coursework. Students entering the doctoral program with a bachelor's degree are recommended to take the DQE at or before completion of 30 graduate credits of didactic coursework. The written portion of the DQE involves writing a dissertation proposal in the form of an NIH-style F30/F31 fellowship grant proposal and the oral portion involves presentation and defense of the dissertation proposal, in which the Dissertation Committee members serve as examiners.

A minimum of 60 graduate credits are required to complete the PhD degree in BME. For someone entering with a BS degree, this constitutes 36 credits in didactic coursework, 9 credits in dissertation, and a minimum of 15 credits in reading and research. For those entering with an MS degree or with 18 graduate credits (see Transfer of Credits Policy), they are required to complete a minimum of 18 credits in didactic coursework, 9 credits in dissertation, and a minimum of 33 credits in reading and research. Pre-requisite courses for applicants who do not have a BME degree are not counted as graduate credits. Reading and Research credits can be earned by registering and attending a seminar series, workshop, conference, journal club, or simply carrying dissertation-related activities. A student can register for up to 9 credits of reading and research per semester during fall and spring semesters and up to 6 credits during the summer. Students should register for dissertation credits in the semester they intend to defend their dissertation.

Required Courses

BIOE 10222 Ethics and Integrity in Science and Course. 1 credit.

BIOE 10444 Research Ethics Discussion Series. 1 credit.

INBS 16293 Writing an Individual Fellowship. 2 credits. (Required for MSTP students only)

BIOM 35295 Reading and Research. *(Variable 1-9 credits taken each term)*

BIOM 6953/*BIEN 6953. Seminar in Biomedical Engineering. *(0 credits. Take each fall and spring terms)*

BIOM 35399 Doctoral Dissertation. *(Variable 1-9 credits. 9 credits required. Take in final term)*

Biomedical Sciences. 3 credits from the following list:

*BIOL 5102. Experimental Molecular Biology. 3 credits.

*BIOL 5703. Exercise Physiology. 3 credits.

BIOM 5700/*BIEN 5700. Systems Physiology. 3 credits.

BIOM 5720/*BIEN 5720 Cardiopulmonary Mechanics. 3 credits.
INBS 16215 Foundations in Biomedical Sciences I. 3 credits.
INBS 16216 Foundations in Biomedical Sciences II. 3 credits.
INBS 16217 Foundations in Biomedical Sciences III. 3 credits.
INBS 16218 Foundations in Biomedical Science IV. 3 credits.
INBS 16271 Fundamentals of Neuroscience. 3.5 credits.
NSCI 12221 Advanced Systems Neuroscience. 3 credits.
NSCI 12237 Cellular and Molecular Neurobiology. 3 credits.
PHYS 08205 Advanced Physiology. 3 credits.

Biostatistical Methods. 3 credits from the following list:

BIOS 04224 Biostatistical Computing. 3 credits.
BIOS 04231 Statistical Models and Methods I. 3 credits.
BIOS 04232 Statistical Models and Methods II. 3 credits.
BIOS 04233 Introduction to Statistical and Machine Learning. 3 credits.
BIOS 04363 Advanced Statistics I. 3 credits.
BIOS 04365 Linear Models I. 3 credits.
*MSCS 5720. Statistical Methods. 3 credits.
*MSCS 5740. Biostatistical Methods and Models. 3 credits.

Scientific and Technical Writing. 2 credits from the following list:

INBS 16292 Writing a Scientific Paper. 1 credit.
INBS 16293 Writing an Individual Fellowship. 2 credits.

Leadership, Scientific Communication, and Teaching Skills. 2 credits from the following list:

*GRAD 8961. Science Storytelling. 1 credit.
INBS 16290 Professional Development I. 1 credit.
INBS 16291 Professional Development II. 1 credit.

Applied Mathematics. 3 credits from the following list:

*BIEN 5410. Applied Finite Element Analysis. 3 credits.
BIOM/*BIEN 5400 Transport Phenomena. 3 credits.
BIOM/*BIEN 5510 Image Processing for the Biomedical Sciences. 3 credits.
BIOM/*BIEN 6120 Introduction to the Finite Element Method. 3 credits.
BIOM/*BIEN 6200 Biomedical Signal Processing. 3 credits.
BIOM/*BIEN 6210 Advanced Biomedical Signal Processing. 3 credits.
BIOM 6500/*BIEN 6500 Mathematics of Medical Imaging. 3 credits.
BIOP 03240 Fourier Transformation. 3 credits.
*EECE 6010 Advanced Engineering Mathematics. 3 credits.
*MEEN 5265 Intermediate Finite Element Method. 3 credits.
*MEEN 6101 Advanced Engineering Analysis I. 3 credits.
*MEEN 6102 Advanced Engineering Analysis II. 3 credits.
*MEEN 6360 Computational Fluid Mechanics. 3 credits.
*MEEN 6365 Computational Methods in Heat Transfer and Fluid Flow. 3 credits.

Computational and Modeling Methods. 3 credits from the following list:

*BIEN 5410. Applied Finite Element Analysis. 3 credits.
BIOM 5710/*BIEN 5710. Analysis of Physiological Models. 3 credits.
BIOM/*BIEN 6120 Introduction to the Finite Element Method. 3 credits.
BIOM 6620/*BIEN 6620. Modeling Rehabilitative Biosystems. 3 credits.
*COSC 5610 Data Mining. 3 credits.
*EECE 6820 Artificial Intelligence. 3 credits.
*EECE 6822 Machine Learning. 3 credits.
*EECE 6840 Neural Networks and Neural Computing. 3 credits.
*MEEN 5270 Physical Systems Modeling. 3 credits.
BIOM 35284. Computational Methods for Biomedical Research. 3 credits.
BIOM 35285. Mathematical Biology. 3 credits.

Electives. *18 credits.* (Review suggested electives below. Alternate Electives approved by Program Director)

Suggested Elective Courses

BIOE 10223 Law and Bioethics. 3 credits.
BIOM 5320 Biomedical Instrumentation Design. 3 credits.
BIOM 5400 Transport Phenomena. 3 credits.
BIOM 5410 Applied Finite Element Analysis. 3 credits.
BIOM 5420 Biomaterials Science and Engineering. 3 credits.
BIOM 5510 Image Processing for the Biomedical Sciences. 3 credits.
BIOM 5610 Rehabilitation Robotics. 3 credits.
BIOM 5720 Cardiopulmonary Mechanics. 3 credits.
BIOM 5931 Topics in Biomedical Engineering. 1-3 credits.
BIOM 6200 Biomedical Signal Processing. 3 credits.
BIOM 6301 Clinical Needs Finding. 3 credits.
BIOM 6302 Clinical Observation. 3 credits.
BIOM 6440 Biomedical Engineering Analysis of Trauma. 3 credits.
BIOM 6450 Musculoskeletal Biomechanics I. 3 credits.
BIOM 6600 Neuromotor Control. 3 credits.
BIOM 6610 Rehabilitative Biosystems. 3 credits.
BIOM 6710 Cellular and Molecular Bioengineering. 3 credits.
BIOM 6931 Topics in Biomedical Engineering. 3 credits.
BIOP 03230 Nuclear Magnetic Resonance. 3 credits.
BIOP 03239 Functional MRI Contrast Mechanisms and Applications. 3 credits.
BIOP 03297 Journal Club MRI. 1 credit.
BIOS 04231 Statistical Models & Methods I. 3 credits.
BIOS 04232 Statistical Models & Methods II. 3 credits.
BIOS 04233 Introduction to Statistical and Machine Learning. 3 credits.
CDBI 31257 The Biology of Vision. 3 credits.
CTSI 20253 Methods in Grant Preparation. 3 credits.
HCTM 14200 Survey of Biomedical Engineering Technology. 3 credits.
INBS 16272 Graduate Neuroanatomy. 0.5 credit.
MIIM 25259 Mucosal Immunology. 1 credit.
MIIM 25262 Tumor Immunology. 1 credit.
MIIM 25265 Immunological Tolerance. 1 credit.
NSCI 12221 Advanced Systems Neuroscience. 3 credits.
NSCI 12271 Fundamentals of Neuroscience. 3.5 credits.

PHYS 08230 Physiological Genomics. 5 credits.

PHYS 08270 Current Concepts in Cardiovascular Biology. 3 credits.

Course Descriptions

View the [Graduate School Course Catalog](#) for course descriptions.

Notes

*Courses offered at [Marquette University](#).

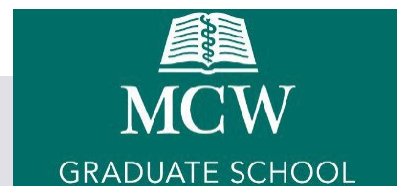
Please see [Biomedical Engineering Handbook](#) for additional information.

Contact information: gradschool@mcw.edu | (414) 955-8218

2026-27

BIOPHYSICS

Degree Offered: Doctor of Philosophy



Program Description

The Biophysics Graduate Program encourages applications from students with strong backgrounds in chemistry, biology, biochemistry, biomedical engineering, physics, or mathematics and an enthusiasm for carrying out scientific research. The Program consists of two major areas—Molecular Biophysics and Magnetic Resonance Imaging. The faculty in the Molecular Biophysics section utilize biophysical techniques to study structural biology, free radicals in biology, and membrane protein systems. For example, current research includes studies on protein structure, functional dynamics, free radicals in biology, and magnetic resonance technology development. Students wishing to pursue this track should apply directly to the Biophysics Graduate Program or to the [Interdisciplinary Program in Biomedical Sciences \(IDP\)](#). The Magnetic Resonance Imaging section emphasizes research in the areas of cognitive neuroscience, signal processing, statistical analysis, image production, and hardware development. Students wishing to pursue this track should apply directly to the Biophysics Graduate Program or through the [Neuroscience Doctoral Program \(NDP\)](#). Applicants to this track are expected to have a high level of competence in physics and mathematics. Both tracks accept students from the [Medical Scientist Training Program \(MSTP\)](#).

Admission Requirements

In addition to the general [Graduate School admission requirements](#), this program has additional specific requirements.

Students should have a strong foundation in quantitative and biological sciences.

Fields of Study

- Protein structure and functional dynamics studies using site-directed spin labeling EPR spectroscopy.
- Structure-function relationships for membrane proteins; protein folding and dynamics; antibiotic peptides.
- Structure and function of protein-lipid assemblies relevant to human pathology.
- Structure and function of proteins embedded in cellular membranes using NMR spectroscopy.
- Molecular mechanisms of membrane protein function; role of protein conformational heterogeneity; GPCRs.
- Magnetic resonance (EPR, NMR, MRI) technology development.
- Molecular modeling and simulation integrating diverse experimental data
- Computational structural biology, molecular dynamics in mitochondrial processes
- Biological chemistry of nitric oxide and related species in physiology and pathology. Oxidative biology of sickle cell disease.
- Spin label studies on membrane dynamics and organization (raft- domain formation); spin label oximetry.
- Electron spin resonance studies of oxygen radicals and reactive nitrogen species in biological systems; cardiovascular and neuro-degenerative pathologies (atherosclerosis,

hypertension, ALS, Alzheimer's disease, etc.), free radicals in apoptosis and signal transduction, and chemotherapeutic drug-induced toxicity.

- Investigation of pathophysiological mechanisms enhancing free radical formation from nitric oxide synthase in vascular cells and their relation to the tetrahydrobiopterin pathway.
- Mapping of human brain language systems with magnetic resonance imaging (MRI).
- Development and employment of MRI techniques to diagnose and monitor injuries and diseases of the central nervous system.
- Mapping of activity in human brain visual systems with MRI.
- Characterization of brain cancer tumor cellularity and vascularity through diffusion and perfusion MRI; development of image processing techniques to help clinicians plan surgery and map out brain function for epilepsy.
- Functional MRI study of mechanism of anesthesia with respect to loss and return of consciousness as studied by electrophysiological and brain imaging methods, and of Alzheimer's disease and drugs of abuse.
- Address engineering challenges in diagnostic imaging to achieve higher sensitivity and specificity to the pathophysiology of various diseases, through of novel hardware and imaging protocols for MRI systems.
 - Metal artifact reduction methods for MRI; quantitative susceptibility mapping in MRI.
- Development of multiband or simultaneous multislice imaging technology.
- In vivo quantification of tissue perfusion using exogenous and endogenous contrast agents coupled with MRI.
- Development of MRI methods to assess brain tumor angiogenesis and invasion.

Credits Required to Graduate

60 credits minimum

Non-Course Requirements

- [Preliminary Requirements](#)
 - Qualifying Exam
 - Committee Approval
 - Dissertation Proposal Approval
- Application for Graduation in MCWconnect
- [Degree Completion Requirements](#)

Required Courses

BIOE 10222 Ethics and Integrity in Science. *1 credit.*

BIOE 10444 Research Ethics Discussion Series. *1 credit.*

INBS 16293 Writing an Individual Fellowship. *2 credits.* (Required for MSTP students only)

BIOP 03295 Reading and Research. (Variable 1-9 credits taken each term)

BIOP 03300 Seminar. (1 credit taken each fall and spring terms)

BIOP 03399 Doctoral Dissertation. *9 credits.* (Take in final term)

Journal Club (Take one each fall and spring terms)

BIOP 03297 Journal Club: MRI. *1 credit.*

BIOP 03298 Journal Club: EPR. *1 credit.*

BIOP 03292 Molecular Dynamics Journal Club. *1 credit.*

BIOP 03290 Biophysics Journal Club. *1 credit.*

Track Requirements - Choose from 1 of the following:

Molecular Biophysics – 6 credits in:

BIOP 03223 Electron Spin Resonance. 3 *credits*.

BIOP 03226 Biophysical Techniques in Biochemistry. 3 *credits*.

BIOP 03245 Molecular Modeling and Simulations. 3 *credits*.

OR

Magnetic Resonance Imaging – 6 credits in:

BIOP 03230 Nuclear Magnetic Resonance. 3 *credits*.

BIOP 03239 Functional MRI Contrast Mechanisms and Applications. 3 *credits*.

BIOP 03238 Magnetic Resonance Imaging. 3 *credits*.

Course Descriptions

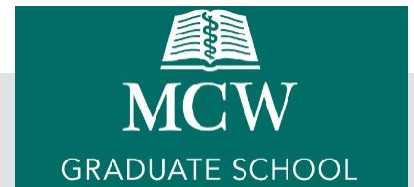
View the [Graduate School Course Catalog](#) for course descriptions.

Contact information: gradschool@mcw.edu | (414) 955-8218

2026-27

BIOSTATISTICS

Degree Offered: Doctor of Philosophy



Program Description

The PhD program in Biostatistics is designed for students who have strong quantitative and computing skills with interest in applying cutting-edge biostatistical research techniques to biological and medical sciences. In this program, students will receive in-depth training on theoretical/methodological/collaborative research in biostatistics and the use of state-of-the-art software. The Division of Biostatistics is a highly collaborative unit and provides lots of opportunities to participate in numerous research projects within MCW and its affiliates.

Admission Requirements

In addition to the general [Graduate School admission requirements](#), this program has additional specific requirements.

Any graduate of an accredited college or university with an undergraduate degree in mathematics or closely related fields with strong preparation in mathematics is eligible for admission. Applicants are expected to have completed and performed well in courses in advanced calculus, linear/matrix algebra, and scientific programming. Those who haven't done so may be considered for admission to the program upon approval of the biostatistics admission committee, and if admitted, these requirements must be completed during the first year of study. In addition, the applicant must have strong interest in pursuing statistical research in biomedical sciences.

Fields of Study

- Survival and competing risks data analysis
- Big data analysis
- High dimensional data analysis
- Bayesian statistics and Bayesian machine learning
- Clinical trials
- Machine learning
- Statistical genetics
- Bioinformatics
- Personalized medicine, causal inference
- Image data analysis
- Missing data

Credits Required to Graduate

60 credits minimum

Non-Course Requirements

- [Preliminary Requirements](#)
 - Qualifying Exam
 - Committee Approval
 - Dissertation Proposal Approval
- Program Specific Requirement(s)

- Biostatistics (PhD) students are required to submit at least one methodology paper to peer reviewed journals.
- Application for Graduation in MCWconnect
- [Degree Completion Requirements](#)

Required Courses

BIOE 10222 Ethics and Integrity in Science. *1 credit.*

BIOE 10444 Research Ethics Discussion Series. *1 credit.*

INBS 16293 Writing an Individual Fellowship. *2 credits.* (Required for MSTP students only)

BIOS 04220 Research Seminar. *(1 credit taken each fall and spring semester)*

BIOS 04295 Reading and Research. *(Variable 1-9 credits taken each term)*

BIOS 04214 Design and Analysis of Clinical Trials. *3 credits.*

BIOS 04221 Biomedical Applications and Consulting. *3 credits.*

OR BIOS 04223 Biomedical Applications and Consulting 2. *2 credits.*

BIOS 04222 Statistical Consulting. *3 credits.*

BIOS 04224 Biostatistical Computing. *3 credits.*

BIOS 04231 Statistical Models and Methods I. *3 credits.*

BIOS 04232 Statistical Models and Methods II. *3 credits.*

BIOS 04233 Introduction to Statistical and Machine Learning. *3 credits.*

BIOS 04240 Biostatistics Inference I. *3 credits.*

BIOS 04241 Biostatistics Inference II. *3 credits.*

BIOS 04363 Advanced Statistics I. *3 credits.*

BIOS 04365 Linear Models I. *3 credits.*

BIOS 04275 Applied Survival Analysis. *3 credits.*

BIOS 04285 Introduction to Bayesian Analysis. *3 credits.*

BIOS 04313 Advanced Statistical Computing. *3 credits.*

BIOS 04384 Statistical Genetics. *3 credits.*

BIOS 04385 Advanced Bayesian Analysis. *3.5 credits.*

BIOS 04386 Theory of Survival Analysis. *3 credits.*

BIOS 24150 Bioinformatics in Omics Analysis. *3 credits.*

Electives. *6 credits.* (Review suggested electives below. Alternate Electives Approved by Program Director)

BIOS 04399 Doctoral Dissertation. *(Variable 1-9 credit(s). 9 credits total required. Take in final term)*

Suggested Elective Courses

A minimum of 6 credit hours of graduate-level electives in a non-statistical field such as biological/medical science are required. Students may take appropriate courses from MCW, UWM or Marquette to satisfy the elective requirements. Students must request approval to enroll in PUBH courses by emailing mph@mcw.edu. Submit the approval email to the Office of the Registrar acadreg@mcw.edu for administrative registration.

Public Health Courses Offered at MCW:

PUBH 18101 Foundations of Public Health. *3 credits.*

PUBH18150 Public Health Law and Ethics. *3 credits.*

PUBH 18155 Public Health Theory & Practice. 3 *credits*.

PUBH 18165 Principles of Public Health Data and Epidemiology. 3 *credits*.

[Computer Science Courses](#) Offered at Marquette University:

COSC 5800 Principles of Database Systems. 3 *credits*.

COSC 6510 Data Intelligence. 3 *credits*.

COSC 6380 Big Data Systems. 3 *credits*.

COSC 5600 Fundamentals of Artificial Intelligence. 3 *credits*.

Course Descriptions

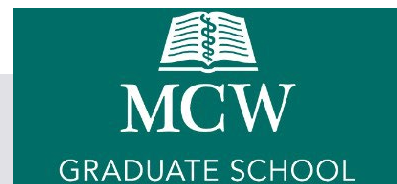
View the [Graduate School Course Catalog](#) for course descriptions.

Contact information: gradschool@mcw.edu | (414) 955-8218

2026-27

CELL & DEVELOPMENTAL BIOLOGY

Degree Offered: Doctor of Philosophy



Program Description

The graduate program in Cell and Developmental Biology (CDB) provides state of the art research training in cell-based experimental biology, including studies of organismal development, cell and organ homeostasis, and mechanisms of disease.

Specific areas of focus include regulation of cell differentiation, the molecular basis of regeneration, how neurons sense their environment, the intricacies of signal transduction, and the mechanisms of disease pathology. The graduate program is hosted by the Department of Cell Biology, Neurobiology and Anatomy, but includes faculty mentors across multiple Departments and Centers of the Medical College of Wisconsin. Students enter CDB through one of several routes: Direct Admission, the Interdisciplinary Program in Biomedical Sciences (IDP), the Neuroscience Doctoral Program (NDP), or the Medical Scientist Training Program (MSTP). Successful completion of this program leads to a Doctor of Philosophy (PhD) degree. This is accomplished through a combination of coursework, seminars, journal clubs, and intensive "hands-on" research in the laboratory of a faculty mentor. CDB graduates have outstanding track record of entering a wide variety of research-related careers including academic post-doctoral research fellowships, industry research scientist positions, employment with consulting firms, science writing positions, among other professions.

Admission Requirements

[Graduate School admission requirements.](#)

Entry to the Cell and Developmental Biology Graduate Program is through Direct Admission, [Interdisciplinary Program in Biomedical Sciences](#) (IDP), the [Neuroscience Doctoral Program](#) (NDP), or the [Medical Scientist Training Program](#) (MSTP). The student is admitted after completion of the first-year curriculum or through the Medical Scientist Training Program following the second year of Medical School. The student elects to complete their dissertation work with faculty of the Cell and Developmental Biology Graduate Program. The student will then have the opportunity to continue graduate studies by selecting among a wide range of courses offered from the Graduate School as well as other programs affiliated with the Medical College. Courses to be taken are based on the student's interests and consultation with the student's advisor.

Fields of Study

- Cellular and molecular mechanisms in developmental biology and neurobiology, which employ genetic approaches, including those in mice, zebrafish, stem cells, and invertebrate organisms.
- Development and diseases of the heart, liver, muscle, the nervous system, eye, and early embryo, among other tissues.
- Mechanisms of pain.
- Biology of vision.

- Cell signaling.
- Mechanisms of regeneration.
- Neuronal homeostasis and neurodegeneration.
- Molecular basis of drug interactions.
- Cancer biology.

Credits Required to Graduate

60 credits minimum

Non-Course Requirements

- [Preliminary Requirements](#)
 - Qualifying Exam
 - Committee Approval
 - Dissertation Proposal Approval
- Program Specific Requirement
 - Students are expected to publish two (2) or more peer-reviewed, first-authored manuscripts with a minimum of at least one accepted at the time of graduation.
- Application for Graduation in MCWconnect
- [Degree Completion Requirements](#)

Required Courses

BIOE 10222 Ethics and Integrity in Science. *1 credit.*

BIOE 10444 Research Ethics Discussion Series. *1 credit.*

INBS 16293 Writing an Individual Fellowship. *2 credits.* (Required for MSTP students only)

CBDI 31295 Reading and Research. (Variable 1-9 credits taken each term)

CBDI 31301 Seminars in Cellular Biology. (1 credit taken each fall and spring terms)

CBDI 31399 Doctoral Dissertation. *9 credits.* (Take in final term)

Electives. *6 credits.* (Review suggested electives below. Alternate Electives Approved by Program Director)

Suggested Elective Courses

CBDI 31207 Introduction to Neuroscience. *2 credits.*

CBDI 31257 Biology of Vision. *3 credits.*

CTSI 20220 Clinical Statistics I. *3 credits.*

INBS 16265 Introduction to Organ Systems Physiology. *2 credits.*

INBS 16269 Basic Immunology. *1 credit.*

INBS 16270 Integrated Microbiology and Immunology. *3 credits.*

INBS 16273 Advanced Cell Biology. *3 credits.*

INBS 16275 Understanding Cell Signaling through Therapeutic Drugs. *2 credits.*

INBS 16276 Developmental and Stem Cell Biology. *3 credits.*

INBS 16278 Functional Genomics. *3 credits.*

MIIM 25273 Advanced Immunology. *3 credits.*

MIIM 25276 Basic Bacteriology. *1 credit.*

MIIM 25277 Basic Virology. *1 credit.*

NSCI 12221 Advanced Systems Neuroscience. *3 credits.*

NSCI 12271 Fundamentals of Neuroscience. *3.5 credits.*

NSCI 12277 Cognitive Neuroscience. *2 credits.*

PHTX 07225 Ion Channels & Signal Transduction. *3 credits.*

PHTX 07237 Modern Drug Discovery & Development. 3 *credits*.

PHYS 08270 Current Concepts in Cardiovascular Biology. 3 *credits*.

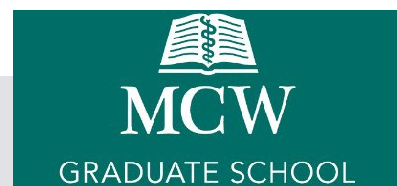
Course Descriptions

View the [Graduate School Course Catalog](#) for course descriptions and prerequisites.

Contact information: gradschool@mcw.edu | (414)955-8218

2026-27

INTERDISCIPLINARY DOCTORAL PROGRAM IN BIOMEDICAL SCIENCES



Program Description

The Interdisciplinary Doctoral Program in Biomedical Sciences (IDP) is committed to providing a broad and integrated education in biomedical science. This education is designed to serve the students well as they move on to pursue specialized research projects. During the first year, students take a core curriculum designed to provide a foundation in biochemistry, cell biology, genetics, immunology, microbiology, pharmacology, physiology, signaling, laboratory techniques, and biostatistics. Students also take 4-6 credits of elective courses and manuscript and grant writing courses to help better prepare them for their chosen field of interest. Finally, two professional development courses provide students with the opportunity to gain experience in various professional scientific skills.

Students also explore their individual research interests through four laboratory rotations that emphasize experimental design and integration into a research team. Students are encouraged to take advantage of the diversity of opportunities in the six participating departments. Once a student selects a dissertation advisor, they become affiliated with one of the following graduate programs: Biochemistry; Biophysics; Cell and Developmental Biology; Microbiology and Immunology; Pharmacology and Toxicology; or Physiology. In addition, students may also pursue a clinical focus if admitted into the Basic and Translational Science Program. Additional information about individual departmental programs is given elsewhere in this publication.

During their second year of studies, students take a course in writing an NIH-style fellowship and prepare and defend a proposal based on their own research that provides them with valuable experience in mastering a scientific problem, formulating a suitable hypothesis, and drafting a feasible and productive experimental scheme with which to test it. Successful completion of this qualifying exam is a major step towards being admitted to candidacy for a PhD degree in one of the participating departments. During their second semester and in subsequent years, students are also expected to successfully complete a number of advanced courses selected with the guidance of their dissertation mentor, dissertation committee, and the Graduate Program Director of their affiliated department. Upper-level students focus on the development of their research skills, performance of their doctoral research, and completion of their dissertation.

Once affiliated with a particular laboratory and department, students can expect attentive personal mentoring by their dissertation advisor. Throughout their graduate careers, students in the Interdisciplinary Program continue to meet as a group to share ideas, insights, and research accomplishments with each other and with the faculty.

This program prepares students for advanced study in one of the following PhD degree-granting programs: [Biochemistry](#), [Biophysics](#), [Cell and Developmental Biology](#), [Microbiology and Immunology](#), [Pharmacology and Toxicology](#) and [Physiology](#).

Admission Requirements

In addition to the general [Graduate School admission requirements](#), this program has additional specific requirements.

Successful applicants will show undergraduate achievement in science and mathematics courses and have prior research experience.

Fields of Study

Faculty participating in the Interdisciplinary Program in Biomedical Research have diverse research interests such as:

- Cancer Biology
- Cardiovascular Biology
- Cell Biology & Signaling
- Developmental Biology
- Drug Discovery
- Enzymology & Metabolism
- Free Radical Biology
- Gene Expressions and epigenetics
- Inflammation & Immunology
- Microbial Infection & Pathogenesis
- Microbiome
- Molecular Genetics
- Molecular Pharmacology & Toxicology
- Neuroscience (Cellular and Molecular)
- Physiological Sciences
- Stem Cell Biology & Regenerative Medicine
- Structural Biology
- Technology Development

Required Courses

Fall Year 1 (14 credits)

INBS 16210 Intro to Biomedical Research. 3 *credits*.

INBS 16215 Foundations in Biomedical Sciences I. 3 *credits*.

INBS 16216 Foundations in Biomedical Sciences II. 3 *credits*.

INBS 16217 Foundations in Biomedical Sciences III. 3 *credits*.

INBS 16242 Techniques in Molecular and Cellular Biology. 2 *credits*.

Spring Year 1 (13-15 credits)

INBS 16210 Intro to Biomedical Research. 4 *credits*.

INBS 16218 Foundations in Biomedical Science IV. 3 *credits*.

INBS 16290 Professional Development I. 1 *credit*.

INBS 16245 Statistics for Basic Sciences. 1 *credit*.

Electives. 4-6 *credits*. (Elective courses listed below)

Summer Year 1 (6 credits)

INBS 16292 Writing a Scientific Paper. 1 *credit*.

BIOE 10222 Ethics and Integrity in Science. 1 *credit*.

New Program Reading and Research. 4 credits.

Fall Year 2 (9 credits)

INBS 16293 Writing an Individual Fellowship. *2 credits.*

INBS 16291 Professional Development II. *1 credit.*

New Program Reading and Research. 6 credits.

Elective Courses

INBS 16265 Introduction to Organ Systems Physiology. *2 credits.*

INBS 16266 Bacterial Diversity and the Microbiome. *1 credit.*

INBS 16267 Protein Chemistry: Applications. *1 credit.*

INBS 16268 Protein Chemistry: Principles. *1 credit.*

INBS 16269 Basic Immunology. *1 credit.*

INBS 16270 Integrated Microbiology and Immunology. *3 credits.*

NSCI 12271 Fundamentals of Neuroscience. *3.5 credits.*

INBS 16272 Graduate Neuroanatomy. *0.5 credit.*

INBS 16273 Advanced Cell Biology. *3 credits.*

INBS 16274 Metabolism. *1 credit.*

INBS 16275 Understanding Cell Signaling through Therapeutic Drugs. *2 credits.*

INBS 16276 Developmental and Stem Cell Biology. *3 credits.*

NSCI12277 Cognitive Neuroscience. *2 credits.*

INBS 16278 Functional Genomics. *3 credits.*

Course Descriptions

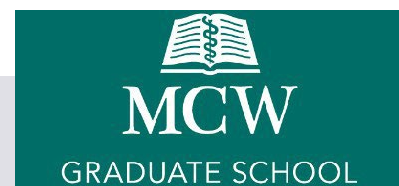
View the [Graduate School Course Catalog](#) for course descriptions.

Contact information: gradschool@mcw.edu | (414) 955-8218

2026-27

MICROBIOLOGY & IMMUNOLOGY

Degree Offered: Doctor of Philosophy



Program Description

The Graduate Program in Microbiology & Immunology (M&I) seeks to teach and train the next generation of research scientists in the molecular and cellular biology of bacterial pathogens, virus/host interactions, the innate and adaptive immune responses, animal and cellular model systems of infection and immunity, the microbiome, and the molecular mechanisms of gene expression, signal transduction, cell proliferation and cancer biology. It is the goal of the faculty and students to utilize classic and cutting-edge methodologies and technologies to conduct interdisciplinary research that will solve problems that are of significant biomedical importance.

Through participation in a variety of departmental activities, M&I graduate students receive a broad education and training base that encompasses various aspects of biomedical science including those centered in the fields of bacteriology, immunology, virology, molecular biology, microbe-host interactions, genetics/gene expression and cancer biology. Our students develop essential professional, leadership, and technical skills that allow them to lead independent research projects, manage collaborations, effectively communicate scientific accomplishments in both written and oral forms, and establish professional networks to support their transition to the next career step. M&I faculty and Program Directors seek to promote accomplishment of these objectives by providing a stimulating work and learning environment in which scientific curiosity is encouraged, scientific questions of significance are investigated, rigorous experimental approaches to problems are designed and executed, data are critically interpreted, and scientific and professional communication skills are developed. The M&I Graduate Program assesses accomplishment of these objectives through several mechanisms including didactic course requirements, required annual research in progress (RIP) scientific presentations, semi-annual meetings with dissertation committee members coupled with submission of committee report forms, and combined dissertation-specific qualifying and defense examination. The ultimate goal of the M&I Graduate Program is to produce well-rounded scientists that possess the necessary maturity, experience, and knowledge base to become independent leaders in the broad area of biomedical sciences, including academia, industry, government, scientific writing, and science policy. These goals are consistent with the mission of the MCW Graduate School and of the Medical College of Wisconsin as a whole.

Admission Requirements

[Graduate School admission requirements.](#)

Students enter the graduate program in the Department of Microbiology and Immunology through the [Interdisciplinary Program in Biomedical Sciences \(IDP\)](#), the [Neuroscience Doctoral Program \(NDP\)](#), the [Medical Scientist Training Program \(MSTP\)](#), or by direct entry into the department.

Fields of Study

The following areas of research in the Department of Microbiology and Immunology offer excellent opportunities for graduate dissertation projects:

Molecular Biology of Bacterial Pathogenesis

- Investigation of genetic, biochemical, and signaling pathways required for antimicrobial resistance and gut colonization by enterococci
- Studies of the phasevarion regulatory system in the pathogenesis of *Haemophilus influenzae*, *Moraxella catharrhalis*, *Helicobacter pylori* and *Neisseria* species
- Investigation of host defenses in the cytosol and how professional cytosolic pathogens like *Listeria monocytogenes* evade them

The Microbiome

- Role of xenobiotics in disrupting gut microbiota and consequences on metabolism
- Importance of bacteriophage in regulating composition of gut microbiota
- Role of xenobiotics in disrupting the gut microbiota/metabolism, two-component signaling, and predatory-prey interactions
- Role of the mosquito microbiome in shaping immune responses to malaria infection

Molecular Genetics of Human Viruses

- Investigation of the molecular mechanisms employed by human herpesviruses to escape detection by the immune system
- Characterization of interactions between cancer-associated gammaherpesviruses and host systems that either promote or restrict lytic and chronic gammaherpesvirus infection
- Investigation of proteins involved in establishing a permissive environment for herpesvirus replication using mass spectrometry

Cellular and Molecular Analysis of the Immune Response

- Autoimmunity. Investigation into roles of T cells and B cells and mechanisms of central and peripheral tolerance in autoimmune disorders including type 1 diabetes, multiple sclerosis, arthritis, and colitis
- Oncology. Investigation of tumor microenvironment and immune response against solid and liquid tumors; mechanistic studies of immunity, anti-tumor evasion and tolerance in anti-tumor response
- Cellular therapy. Allogeneic hematopoietic cell transplantation (Allo-HCT), studies of allogeneic T- and B-cell mediated graft-versus-host (GVH) and graft-versus-leukemia/lymphoma (GVL) responses. Adoptive T-cell Therapy (ACT) including chimeric antigen receptor (CAR) T-cell therapy. Investigations of T-cell activation, differentiation, persistence, and migration immunotherapy against cancer
- Inflammation. Basic mechanisms of immune regulation and inflammation; structure-function studies of adhesion molecules and integrins; immunobiology investigations of chemokines and cytokines and their receptors
- Host Defense. Studies of MHC, antigen presentation, innate and adaptive immune responses to bacterial and viral infections, autoimmune diseases, and cancer
- Immune Metabolism and Molecular Immunology. Seahorse energy metabolism, metabolomic, proteomic, single cell sequencing, and ATAC sequencing analyses of immune system in health and disease

Molecular Mechanisms of Gene Expression

- Study of two-component signal transduction networks in bacteria
- Studies of mosquito non-coding genetic variation in transcriptional enhancers and differential malaria susceptibility

Credits Required to Graduate

60 credits minimum

Non-Course Requirements

- [Preliminary Requirements](#)
 - Committee Approval
 - Combined Qualifying Exam and Dissertation Proposal Approval
- Application for Graduation in MCWconnect
- [Degree Completion Requirements](#)

Required Courses

BIOE 10222 Ethics and Integrity in Science. *1 credit.*

BIOE 10444 Research Ethics Discussion Series. *1 credit.*

INBS 16293 Writing an Individual Fellowship. *2 credits.*

MIIM 25302 Scientific Communication. *1 credit. (Taken in spring of 2nd year)*

MIIM 25301 Research in Progress Course. *1 credit. (2 credits total taken in fall & spring of 3rd year)*

MIIM 25295 Reading and Research. (Variable 1-9 credits taken each term)

MIIM 25399 Doctoral Dissertation. *9 credits. (Take in final term)*

Advanced Coursework:

IDP, NDP and Department Admission students take 9 advanced credits in:

INBS 16270 Integrated Microbiology and Immunology. *3 credits.*

OR

Two of the following courses:

- INBS 16269 Basic Immunology. *1 credit.*
- MIIM 25276 Basic Bacteriology. *1 credit.*
- MIIM 25277 Basic Virology. *1 credit.*

Electives. *6-7 remaining credits. (Review suggested electives below)*

MSTP students take 6 advanced credits in:

Electives. *6 credits. (Review suggested electives below)*

Elective Courses

MIIM 25230 Current Topics in Microbiology and Immunology. *2 credits.*

MIIM 25251 Advanced Molecular Genetics. *3 credits.*

MIIM 25259 Mucosal Immunity. *1 credit.*

MIIM 25260 Mucosal Pathogenesis. *1 credit.*

MIIM 25261 Bacterial Toxin-Mucosal Cell Interactions. *1 credit.*

MIIM 25262 Tumor Immunology. *1 credit.*

MIIM 25263 Signaling in the Immune System. *1 credit.*

MIIM 25265 Immunological Tolerance. *1 credit.*

MIIM 25266 Clinical Immunology. *1 credit.*

MIIM 25267 Bacterial Diversity and the Microbiome. *1 credit.*

MIIM 25269 Advanced Bacterial Physiology. *1 credit.*

MIIM 25271 Membranes and Organelles. *1 credit.*

MIIM 25272 Innate and Adaptive Immunity. *2 credits.*
MIIM 25273 Advanced Immunology. *3 credits.*
MIIM 25275 Advanced Bacterial Genetics. *1 credit.*
MIIM 25276 Basic Bacteriology. *1 credit.*
MIIM 25277 Basic Virology. *1 credit.*
MIIM 25280 Classical Papers in Microbiology and Immunology. *1 credit.*
MIIM 25285 One Health Perspectives on Infectious Agents. *2 credits.*
MIIM 25289 Career Internships in the Biomedical Sciences. *0 credits.*
MIIM 25298 Immunology Journal Club. *1 credit.*

With Program Director permission, elective courses offered by other graduate programs can count towards required elective credits.

Course Descriptions

View the [Graduate School Course Catalog](#) for course descriptions.

Contact information: gradschool@mcw.edu | (414) 955-8218

Program Description

Neuroscience is a dynamic, rapidly growing field devoted to study of the central and peripheral nervous systems in health and disease. During the past three decades, a group of eminent scientists with research interests in many areas of neuroscience has been assembled in the basic science and clinical departments of the Medical College of Wisconsin. These individuals, who have an impressive record of pre-and post-doctoral training, research, and extramural funding in the neurosciences, form the core faculty for this training program. The research areas of the neuroscience faculty include functional imaging, electrophysiological, biochemical, cellular, and molecular approaches to questions of fundamental and clinical importance.

The Neuroscience Doctoral Program (NDP) is committed to providing a specialized education in neuroscience ranging across molecular and cellular mechanisms, systems neuroscience, and brain imaging. This education is designed to serve the students well as they move on to pursue specialized research projects. During the first year, students take a core curriculum designed to provide a foundation in neuroscience as well as biochemistry, cell biology, genetics, molecular biology, physiology, signaling, laboratory techniques, and biostatistics. Students also take 4-6 credits of elective courses and a summer course on general writing to help with the qualifying exam and professional development.

A novel aspect of the NDP is that students will be provided with a hands-on Techniques in Neuroscience program, an immersive 6-week program designed to create an on-ramp for new students to the major techniques and skills they will need for their careers in Neuroscience. Through hands-on, interactive sessions, first-year NDP students will be introduced to 1) Molecular techniques in neuroscience, 2) Microscopy and image analysis, 3) Electrophysiology in the neurosciences, 4) Animal behavioral models for neuroscientific investigation, 5) Basics of Python for data analysis, and 6) Introduction to Human Subjects Research. This program also offers several opportunities for students to engage directly with NDP faculty instructors. Opportunities include social events, conversation-focused seminars, and shadow opportunities. These relationship-building events were designed to facilitate students' transition into their lab rotations by allowing them to familiarize themselves with potential research programs and build connections with faculty members crucial to their doctoral training. It also provides a platform for increased visibility of NDP faculty and opportunities for faculty members to interact with potential future trainees. Students will shadow a minimum of 9 faculty instructors to assist in choosing laboratories for first-year rotations.

Students will then explore their individual research interests through 3-4 laboratory rotations that emphasize experimental design and integration into a research team. Students are encouraged to take advantage of the diversity of neuroscience research opportunities in the participating departments. Once a student selects a dissertation advisor at the end of their first year, they will become affiliated with one of the following graduate programs: Biochemistry; Biophysics; Cell and Developmental Biology; Physiology; Microbiology and

Immunology; or Pharmacology and Toxicology. In addition, students may also pursue a clinical focus if admitted into the Basic and Translational Science Program. Additional information about individual departmental programs is given elsewhere in this publication.

During the second year of their studies, students will take a course in writing an NIH-style fellowship and prepare and defend a proposal based on their own research that will provide them with valuable experience in mastering a scientific problem, formulating a suitable hypothesis, and drafting a feasible and productive experimental scheme with which to test it. The qualifying exam for NDP students will be administered by the graduate program that their thesis laboratory is affiliated with (e.g., Biochemistry; Biophysics; Cell and Developmental Biology; Physiology; Microbiology and Immunology; or Pharmacology and Toxicology). Successful completion of this qualifying exam is a major step towards being admitted to candidacy for a PhD degree in the thesis department. During their second semester and in subsequent years, students are also expected to successfully complete a number of advanced courses selected with the guidance of their dissertation mentor, dissertation committee, and the Graduate Program Director of their affiliated department. Upper-level students will focus on the development of their research skills, performance of their doctoral research, and completion of their dissertation.

Once affiliated with a particular laboratory and department, students can expect attentive personal mentoring by their dissertation advisor. Throughout their graduate careers, students in the Interdisciplinary Program continue to meet as a group to share ideas, insights, and research accomplishments with each other and with the faculty.

This program prepares students for advanced study in one of the following PhD degree-granting programs: [Biochemistry](#); [Biophysics](#); [Cell and Developmental Biology](#); [Microbiology and Immunology](#); [Physiology](#); and [Pharmacology and Toxicology](#).

Admission Requirements

[Graduate School admission requirements](#).

Successful applicants will show undergraduate achievement in science and mathematics courses and have prior research experience.

Fields of Study

Faculty participating in the Neuroscience Doctoral Program have diverse research interests such as:

- Neurodegeneration and Neurotrauma: Neurodegenerative diseases including ALS, Parkinson's disease, Alzheimer's disease, and Spinal Cord Injury are studied using stem cells, animal models, and human tissues.
- Neuroimaging, Tissue to Brain: State of the art brain imaging and biomedical engineering technologies are used to study language, vision, hearing, motor control, learning and memory, and brain associated cancers.
- Cellular and Synaptic Communication: Neuronal communication and receptor-ligand binding at the cellular and structural levels are studied using cutting edge genetic, electrophysiological, and computational tools to dissect mechanisms of development, signaling, and disease associated with vision, learning and memory, and addiction.
- Function of Neural Systems in Normal and Disease states: Sleep disruption, breathing, chronic stress, reward and drug abuse systems, hearing, touch and temperature sensation and chronic pain are studied using diverse model systems and approaches.

Required Courses

Fall Year 1 (9.5 credits)

INBS 16242 Techniques in Molecular and Cellular Biology. 2 *credits*.

NSCI 12271 Fundamentals of Neuroscience. 3.5 *credits*.

NSCI 12295 Reading and Research. 3 *credits*.

NSCI 12298 Journal Club. 1 *credit*.

Spring Year 1 (9.5 credits)

INBS 16245 Statistics for Basic Sciences. 1 *credit*.

INBS 16272 Graduate Neuroanatomy. 0.5 *credits*.

INBS 16290 Professional Development I. 1 *credit*.

NSCI 12295 Reading and Research. 6 *credits*.

Electives. 3 *credits*. (Review elective options below)

Summer Year 1 (6 credits)

INBS 16292 Writing a Scientific Paper. 1 *credit*.

BIOE 10222 Ethics and Integrity in Science. 1 *credit*.

Enroll in 4 credits of Reading and Research with your Mentor

Fall Year 2 (9 credits)

INBS 16291 Professional Development II. 1 *credit*.

INBS 16293 Writing an Individual Fellowship. 2 *credits*.

NSCI 12298 Journal Club. 1 *credit*.

Enroll in 5 credits of Reading and Research with your Mentor

Elective Courses

INBS 16265 Introduction to Organ Systems Physiology. 2 *credits*.

INBS 16266 Bacterial Diversity and the Microbiome. 1 *credit*.

INBS 16267 Protein Chemistry: Applications. 1 *credit*.

INBS 16268 Protein Chemistry: Principles. 1 *credit*.

INBS 16269 Basic Immunology. 1 *credit*.

INBS 16270 Integrated Microbiology and Immunology. 3 *credits*.

INBS 16273 Advanced Cell Biology. 3 *credits*.

INBS 16274 Metabolism. 1 *credit*.

INBS 16275 Understanding Cell Signaling through Therapeutic Drugs. 2 *credits*.

INBS 16276 Developmental and Stem Cell Biology. 3 *credits*.

INBS 16278 Functional Genomics. 3 *credits*.

NSCI 12221 Advanced Systems Neuroscience. 3 *credits*.

NSCI 12237 Cellular Molecular Neuroscience. 3 *credits*.

NSCI 12277 Cognitive Neuroscience. 2 *credits*.

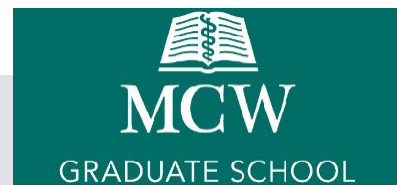
Course Descriptions

View the [Graduate School Course Catalog](#) for course descriptions.

2026-27

PHARMACOLOGY & TOXICOLOGY

Degree Offered: Doctor of Philosophy



Program Description

The Pharmacology & Toxicology Doctoral program provides diverse research opportunities in the areas of cardiovascular, cancer, and neurosciences. An emphasis is placed on cellular and molecular pharmacology/toxicology and signal transduction. The primary objective of our program is to provide students with an academic background, professional skills, and expertise in state-of-the-art scientific approaches needed to investigate and solve the important biological problems that will be the focus of research in the decades to come. Our graduate degree program is multidisciplinary in nature and has strong associations with researchers in other basic science and clinical departments.

There are three major components to the program: graduate level coursework, successful completion of a combined written and oral qualifying exam, and the completion of a novel, publishable research project.

The coursework requirements of the doctoral program are flexible and tailored to the needs of individual students as much as possible. However, emphasis is placed on instruction in the areas of basic pharmacological principles, mechanism of drug action, signal transduction, and pharmacological techniques.

After completion of the initial coursework, students take a qualifying examination. The qualifying examination is designed to ensure a solid biomedical knowledge base has been established and consists of writing and defending a research proposal. The exam typically takes place in the second year of the doctoral program.

After a student has successfully passed his or her qualifying examination and completed the basic coursework, his or her time is spent engaged in a cutting-edge research project in the laboratory of a member of the department's graduate faculty. The final requirement of the program is for the student to write and defend a dissertation describing their research project.

All students entering directly into the Pharmacology & Toxicology program are required to complete the IDP curriculum during their 1st year. Alternatively, the program director may waive these requirements.

Admission Requirements

[Graduate School admission requirements.](#)

Entry to the Pharmacology & Toxicology Graduate Program is through Direct Admission, [Interdisciplinary Program in Biomedical Sciences](#) (IDP), [the Neuroscience Doctoral Program](#) (NDP), or the [Medical Scientist Training Program](#) (MSTP). The student is admitted after completion of the first-year curriculum or through the Medical Scientist Training Program following the second year of Medical School. The student elects to complete their dissertation work with faculty of the Pharmacology & Toxicology Graduate Program. The student will then have the opportunity to continue graduate studies by selecting among a wide range of

courses offered from the Graduate School as well as other programs affiliated with the Medical College. Courses to be taken are based on the student's interests and consultation with the student's advisor.

Fields of Study

Research opportunities in the department are available in four general areas:

Cardiovascular Pharmacology

- Cellular pharmacology of vascular smooth muscle and endothelium
- Molecular biology of cell adhesion molecules and other inflammatory mediators
- Mechanisms of action of anti-hypertensive and anti-ischemic drugs
- Therapeutic development for the treatment of cardiovascular disease

Cancer Biology

- Study of cellular signaling pathways that promote malignancy and metastasis
- Identification of genes and genetic mutations that increase susceptibility to cancer
- Therapeutic development for the treatment of cancer

Neuropharmacology

- Biochemical and molecular mechanisms of action of centrally acting neurotransmitters and drugs
- Signal transduction mechanisms involving receptors, ion channels and protein trafficking
- Biochemical mechanisms and behavioral effects of drugs of abuse
- Therapeutic development for the treatment of neurological and psychiatric diseases

Structural Biology and Signaling

- Fundamentals of structural biology, molecular biology, and biochemistry are applied to mechanisms of drug action
- Ongoing projects include studies of the structures of drug targets and the effects of drugs on signal transduction processes, including receptors and intracellular signaling molecules

Credits Required to Graduate

60 credits minimum

Non-Course Requirements

- [Preliminary Requirements](#)
 - Qualifying Exam
 - Committee Approval
 - Dissertation Proposal Approval
- Application for Graduation in MCWconnect
- [Degree Completion Requirements](#)

Required Courses

BIOE 10222 Ethics and Integrity in Science Course. *1 credit.*

BIOE 10444 Research Ethics Discussion Series. *1 credit.*

INBS 16293 Writing an Individual Fellowship. *2 credits.*

PHTX 07295 Reading & Research. *(Variable 1-9 credits taken each term)*

PHTX 07301 Seminar. *1 credit. (1 credit taken each spring term)*

Electives. 3 courses.

Pharmacology Core Elective (2 of the following courses)

INBS 16275 Understanding Cell Signaling Through Therapeutic Drugs. 2 credits.

PHTX 07237 Modern Drug Discovery and Development. 3 credits.

PHTX 07225 Ion Channels and Signal Transduction. 3 credits.

PHTX 07226 Current Concepts of Cancer Biology. 3 credits.

General Elective (1 of the following courses)

INBS 16242 Techniques in Molecular and Cellular Biology

INBS 16265 Introduction to Organ Systems Physiology

INBS 16270 Integrated Microbiology and Immunology. 3 credits.

INBS 16273 Advanced Cell Biology. 3 credits.

INBS 16276 Developmental and Stem Cell Biology. 3 credits.

INBS 16278 Functional Genomics. 3 credits.

NSCI 12237 Cellular Molecular Neuroscience

NSCI 12271 Fundamentals of Neuroscience. 3.5 credits.

PHTX 07260 Skill Enhancement through Experiential Development (SEED)

Other electives may be acceptable with approval of the Program Director

PHTX 07399 Doctoral Dissertation. (Variable 1-9 credit(s). 9 credits total required. Take in final term)

Course Descriptions

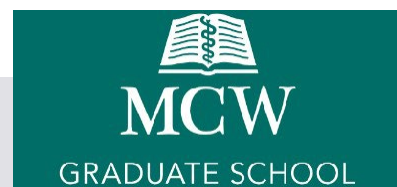
View the [Graduate School Course Catalog](#) for course descriptions.

Contact information: gradschool@mcw.edu | (414) 955-8218

2026-27

PHYSIOLOGY

Degree Offered: Doctor of Philosophy



Program Description

The Physiology program at MCW features research leaders with strong programs in cardiovascular, renal, metabolic, and respiratory physiology and utilize genetics, genetically manipulated model systems, functional genomics, proteomics, bioinformatics, computational biology, with a growing strength in neuroscience. Didactic coursework covers a broad interdisciplinary foundation complemented with several integrative systems physiology courses. Trainees develop critical thinking skills and other professional skills through performance of cutting-edge research to prepare the next generation of scientists in the Physiological Sciences.

Admission Requirements

[Graduate School admission requirements.](#)

Admission to the Physiology Graduate Program is through the [Interdisciplinary Program in Biomedical Sciences \(IDP\)](#), [Neuroscience Doctoral Program \(NDP\)](#), or [Medical Scientist Training Program \(MSTP\)](#). After completion of the first-year curriculum of that program, students who choose to complete their dissertation research project with faculty of the Physiology Graduate Program will have the opportunity to continue their graduate studies by selecting from among a wide range of courses that are offered within the Physiology Graduate Program as well as other programs at MCW. Courses to be taken are based on the students' interest in consultation with the student's dissertation advisor and committee.

Fields of Study

There are six general areas of Physiology in which students may conduct research. Both human and animal models are studied.

Circulatory

- Overall control of the cardiovascular system with emphasis on the neurohumoral control of arterial pressure and the interactions of the renal body fluid volume system.
- Ongoing projects relate to the role of circulatory smooth muscle in hypertension.
- Projects related to cardiac and vascular physiology and pathophysiology following injury.

Endocrinology

- Renin-angiotensin-aldosterone system, vasopressin, and prostaglandin with emphasis on the role of these systems on the control of body fluids, electrolytes, arterial pressure regulation and basal metabolic rate determination in the context of obesity.
- Role of environmental exposures to endocrine disruptors.

Renal and Excretory

- The importance of autocrine, paracrine, and hormonal factors in the regulation of renal tubular and vascular function.
- Elucidating biological pathways contributing to the development of renal failure and hypertensive disease.
- Neural mechanisms regulating bladder function and bladder pain

Respiratory

- The role of the vagal-mediated influences on the control of breathing, with an emphasis on early life exposures to high oxygen and Bronchopulmonary Dysplasia.
- The neural basis of opioid-induced respiratory depression and identifying novel countermeasures for fentanyl overdose.
- Rodent-based studies elucidating mechanisms of Sudden Unexpected Death in Epilepsy (SUDEP).

Genetics

- Identification and characterization of gene(s) involved in the development of complex disorders in humans and rat models.
- CRISPR/Cas9 gene editing in cells, including inducible pluripotent stem cells, and whole animal models.

Molecular and Cell Biology

- Cell signaling in renal, respiratory, and cardiovascular diseases
- DNA binding proteins and their role in health and models of disease
- Development of novel gene editing strategies in vitro and in vivo

Credits Required to Graduate

60 credits minimum

Non-Course Requirements

- [Preliminary Requirements](#)
 - Qualifying Exam
 - Thesis Committee Approval
 - Dissertation Proposal Approval
- Application for Graduation in MCWconnect
- [Degree Completion Requirements](#)

Program Requirements

The emphasis of our PhD program is to provide training in whole-animal integrative Physiology complemented by training in cellular and molecular Physiology. To achieve this objective, all PhD students are required to complete a sequence of required courses in addition to any elective courses.

For a complete listing of all courses and their timing of enrollment throughout the Physiology PhD program, see the Physiology Student and Faculty Handbook (requests sent to Matt Hodges, PhD (mhodes@mcw.edu)). The requirements are summarized below:

Year 1					
Fall 2021			Spring 2022		Summer 2022
FBS1 (3cr)	FBS2 (3cr)	FBS3 (3cr)	FBS4 (3cr)	Intro to Organ Systems (2cr)	Ethics (1 cr)
			Statistics	Elective/Functional Genomics (3cr)	Scientific Writing (1cr)
Techniques in Molecular and Cell Biol (1cr)				Professional Development (1cr)	
Rotation 1	Rotation 2	Rotation 3	Rotation 4	Join lab (Feb)	

Year 2					
Fall 2022			Spring 2023		Summer 2023
Advanced Human Physiology (3cr)			Electives with permission		Seminar (1 cr)
Writing an Individual Fellowship (1cr)			Special Topics (1cr)		
Qualifying Exam (Dec)			Full-time physiological research		

All students enter through the Interdisciplinary Doctoral Program (IDP), Neuroscience Doctoral

Program (NDP), and/or the Medical Scientist Training Program (MSTP). In addition to the course requirements of these programs, there are additional required courses in the Physiology program (highlighted in yellow above). For those entering through IDP and NDP, one required course must be completed in Spring of Year 1 (Organ Systems Physiology). Students are then required to also enroll in the Seminar course in the Summer semester. Note that the summer writing course has been temporarily excluded from the course requirements for 2026-2027 matriculation. Additional required courses in the Physiology program prior to the Qualifying Exam include a grant writing course and Advanced Physiology (see descriptions below), which should be completed in the Fall semester of Year 2. Additional required courses that may be completed before or after completion of the Qualifying Exam include Functional Genomics [Spring Offering], Seminar (each Summer semester beginning in Year 2), and Special Problems in Physiology (each Spring semester beginning in Year 2).

Advanced Physiology: This 3-credit course provides the foundation for physiological concepts and integrative thinking and covers 4 major physiological systems: 1) endocrinology and reproduction, 2) cardiovascular physiology, 3) respiratory physiology, 4) renal physiology. Material will be covered by completing assigned pre-work (recorded lectures) which are complemented by in-person condensed review sessions/lectures and presentation of classical and cutting-edge research publications within each discipline.

Students complete a written and oral Qualifying Examination after completing courses in the Fall of the second year in the program. This examination is administered by the Physiology Program Faculty. The written component is an NIH-style grant proposal focused on a topic chosen by the student with guidance from their primary mentor. Ideally, the proposed research is focused on the student's potential dissertation/thesis work. The proposal and performance in the oral component of the Qualifying Exam will be evaluated by the examination committee and if acceptable the student will reach advanced degree status.

In each spring semester following the Qualifying Exam, physiology students enroll in Special Problems in Physiology course which is a journal club discussion of manuscripts. Another requirement of all MCW PhD programs is to fulfill two credits in Bioethics by completing Courses on Ethics and Integrity in Science and Research Ethics Discussion Series which are usually completed in the first two years. Students may choose to enroll in elective courses to complement their academic and research interests. Graduate students in other programs may choose to also enroll in any physiology course. Physiology students can also enroll in courses taught by other basic science departments. Students and their advisors choose elective courses that best meet the students' career needs. Course selection can be specific to Physiology or from other MCW departments or other institutions in Milwaukee.

Summary of explicit expectations and timelines for trainees

Students are expected to: 1) complete four 5-week research rotations, 2) choose a laboratory for their PhD research by February of the first year in graduate school, 3) complete the core didactic IDP and Physiology course curriculum by the end of the second year in graduate school, 4) fulfill the requirements for the PhD Qualifying Examination by the end of the second year in graduate school, 5) form an approved dissertation committee within 6 months of completing the Qualifying Exam, 6) provide an approved dissertation outline within 6 months after completing the Qualifying Exam, 7) attend and present research at regional or national meetings annually, 8) complete the PhD within 5 years after matriculation, and 9) publish two (2) or more peer-reviewed, first-authored manuscripts with a minimum of at least one accepted at the time of graduation.

Required Courses

BIOE 10222 Ethics and Integrity in Science. *1 credit.*

BIOE 10444 Research Ethics Discussion Series. *1 credit.*

INBS 16293 Writing an Individual Fellowship. *2 credits. (Required for MSTP students only)*

PHYS 08205 Advanced Physiology. *3 credits.*

INBS 16265 Organ Systems Physiology. *2 credits.*

INBS 16278 Functional Genomics. *3 credits.*

PHYS 08208 Current Topics in Physiology. *(1 credit each. Take each fall and spring terms)*

PHYS 08275 Special Problems in Physiology. *(1 credit each. Take each spring term)*

PHYS 08301 Seminar. *(1 credit each. Take each summer term)*

PHYS 08295 Reading and Research. *(Variable 1-9 credits taken each term)*

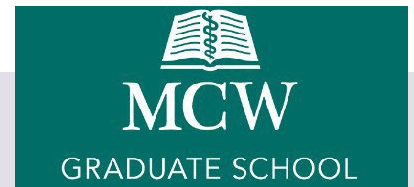
PHYS 08399 Doctoral Dissertation. *(Variable 1-9 credits. 9 credits required. Take in final term)*

Course Descriptions

View the [Graduate School Course Catalog](#) for course descriptions.

Contact information: gradschool@mcw.edu | (414) 955-8218

2026-27
PUBLIC & COMMUNITY HEALTH
Degree Offered: Doctor of Philosophy



Program Description

The purpose of this PhD Program is to transform the research paradigm in public and community health by educating a new generation of innovative researchers who will integrate the rigors of the traditional public health sciences with the essential components of community health improvement through participation and partnership.

Full-Time

The program is designed for a four-year, full-time commitment. All full-time students in the program are required to be enrolled in a minimum of 9 credits in the fall and spring semesters and 6 credits in the summer. The student is responsible for maintaining full-time enrollment.

Full-time students must complete the required coursework and need a minimum of 60 credits to graduate. Students must maintain a full-time credit load each semester to be eligible to receive a stipend.

**The program director may waive program requirements in exceptional circumstances.*

Part-Time

It is recommended that all part-time students in the program be enrolled in 1-8 credits in the fall and spring semesters and 1-5 credits in the summer. The student is responsible for maintaining part-time enrollment. Part-time students must complete the required coursework and need a minimum of 60 credits to graduate.

**The program director may waive program requirements in exceptional circumstances.*

Admission Requirements

[Graduate School admission requirements.](#)

If the undergraduate degree is not in public health, then applicants are required to have six credits of psychology, sociology, or anthropology, three credits of anatomy, physiology, or biology, three credits of statistics and three credits of research methods. Research or professional experience relevant to public and community health is required; graduate degrees (MA, MPH, MS etc.) are not required for admission consideration.

Fields of Study

Students will discover and participate in innovative research conducted by faculty at the Medical College of Wisconsin.

PhD students have the opportunity to learn from these nationally recognized leaders in public and community health utilizing interdisciplinary approaches to complex public health issues.

Credits Required to Graduate

60 credits minimum

Non-Course Requirements

- [Preliminary Requirements](#)
 - Qualifying Exam
 - Committee Approval
 - Dissertation Proposal Approval
- Program Specific Requirement(s)
 - Public & Community Health students are required to submit at least one manuscript from your dissertation to a peer reviewed journal (and provide documentation of submission to the Program Director)
- Application for Graduation in MCWconnect
- [Degree Completion Requirements](#)

Required Courses

BIOE 10222 Ethics and Integrity in Science. *1 credit.*

BIOE 10444 Research Ethics Discussion Series. *1 credit.*

PUCH 19150 Introduction to Epidemiology. *3 credits.*

PUCH 19201 Community Health Improvement I: Foundations of Public and Community Health. *3 credits.*

PUCH 19202 Community Health Improvement II: Health Disparities and Underlying Determinants of Health. *3 credits.*

PUCH 19203 Community Health Improvement III: Principles and Practices of Community-Academic Partnerships. *3 credits.*

PUCH 19204 Community Health Improvement IV: Translating Community Health Improvement into Policy. *3 credits.*

PUCH 19225 Introduction to Statistical Analysis. *3 credits.*

PUCH 19226 Applied Regression Analysis. *3 credits.*

PUCH 19230 Qualitative and Mixed Methods. *3 credits.*

PUCH 19232 Qualitative Data Analysis. *3 credits.*

PUCH 19295 Reading and Research. *(Variable 1-9 credits taken each term)*

PUCH 19301 Seminar. *1 credit. (7 total credits required)*

PUCH 19399 Doctoral Dissertation. *(Variable 1-9 credits. 9 credits required. Take in final term)*

Electives. *9 credits. (Review suggested electives below. Alternate Electives Approved by Program Director)*

Suggested Elective Courses

PUCH 19210 Health and Medical Geography. *3 credits.*

PUCH 19215 Injury Prevention and Public Health. *3 credits.*

PUCH 19229 Survey Research Methods. *3 credits.*

PUCH 19234 Introduction to Grant Writing. *2 credits.*

PUCH 19235 Data Management and Use for Public and Community Health. *3 credits.*

PUCH 19250 Human Health Risk Assessment and Environmental Health Literacy. *3 credits.*

PUCH 19152 Global Environmental Health. *3 credits.*

PUCH 19260 Implementation Research Methods. *3 credits.*

PUCH 19280 Advanced Program Evaluation for Public Health. *3 credits.*

PUCH 19290 Critical and Analytical Writing. *3 credits.*

GLHE 29150 Global Environmental Health. *3 Credits.*

GLHE 29219 Introduction to Global Health Equity. 3 credits.

GLHE 29275 Global Health Consulting and Research Methods. 3 Credits.

Alternate Electives Approved by Program Director

Course Descriptions

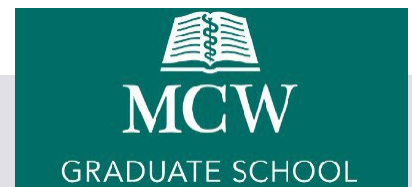
View the [Graduate School Course Catalog](#) for course descriptions.

Contact information: gradschool@mcw.edu | (414) 955-8218

2026-27

PUBLIC HEALTH

Degree Offered: Doctor of Public Health



Program Description

This is the first online DrPH program in Wisconsin designed to prepare experienced public health practitioners with the competencies needed to lead community health improvement efforts. The program is a cohort model in that the students will work together over the course of three years. This will enable the students to work on problems together, and to challenge one another in an environment built on trust. Forty-six credits encompass applied course work culminating with successful defense of the dissertation. The curriculum is a "hybrid" in that synchronous and asynchronous online learning will occur in addition to three summer visits for on-campus learning. Training will be self-directed, faculty and dissertation advisor guided, and cohort influenced. Academic relationships and community partnerships developed through this program will support success in the short term and over the course of a career.

Admission Requirements

In addition to the general [Graduate School admission requirements](#), this program has additional specific requirements.

A master's degree from an accredited school or program in public health, a master's degree in a related field, a doctoral degree, or a professional degree (e.g., MD, JD, PharmD). Students without a master's degree in public health from an accredited school of public health or program will be required to complete an online core public health course prior to the start of the first semester of the program.

At least three years of postgraduate experience in public health, healthcare, or a related field with management or leadership responsibilities is required.

Students must commit to attending three onsite summer visits and participate in synchronous sessions at designated times.

Credits Required to Graduate

46 credits

Non-Course Requirements

- [Preliminary Requirements](#)
 - Committee Approval
 - Dissertation Proposal Approval
- Application for Graduation in MCWconnect
- Program Specific Requirement(s)
 - Applied Practice Experience
 - DrPH students are required to engage in an applied practice experience in which they are responsible for completion of at least one project that is meaningful for an organization and to advanced public health practice. Relevant organizations may include governmental, nongovernmental, non-profit, industrial, and for-profit settings.

The applied practice experience may be completed within a student's own work setting. The deliverable must contain a reflective component that includes the student's expression of personal and/or professional reactions to the applied practice experience. The student will develop a plan under the guidance of the program staff, director, and faculty advisor.

- [Degree Completion Requirements](#)

Required Courses

Year 1 Fall Term

PUBH 28201 Public Health Practice I: Building a Foundation for Public Health. *3 credits.*

PUBH 28150 Research Theory. *3 credits.*

PUBH 28301 Doctoral Seminar. *1 credit. (6 total credits required)*

Year 1 Spring Term

PUBH 28202 Public Health Practice II: Building Community Partnerships and Coalitions. *3 credits.*

PUBH 28160 Public Health Research Study & Design. *3 credits.*

PUBH 28301 Doctoral Seminar. *1 credit. (6 total credits required)*

Year 1 Summer Term

PUBH 28106 Introduction to Community Engagement. *3 credits.*

PUBH 28301 Doctoral Seminar. *1 credit. (6 total credits required)*

Year 2 Fall Term

PUBH 28151 Data Collection and Analysis. *3 credits.*

PUBH 28203 Public Health Practice III: Strategies to Eliminate Health Disparities. *3 credits.*

PUBH 28301 Doctoral Seminar. *1 credit. (6 total credits required)*

Year 2 Spring Term

PUBH 28170 Public Health Applied Research. *3 credits.*

PUBH 28153 Executive Communication in Public Health. *3 credits.*

PUBH 28301 Doctoral Seminar. *1 credit. (6 total credits required)*

Year 2 Summer Term

PUBH 28152 Executive and Organizational Leadership. *3 credits.*

PUBH 28301 Doctoral Seminar. *1 credit. (6 total credits required)*

Year 3

PUBH 28390 Dissertation Preparation. *(Variable 1-9 credits taken each term. 9 credits total required)*

PUBH 28399 Doctoral Dissertation. *1 credit.*

Course Descriptions

View the [Graduate School Course Catalog](#) for course descriptions.

DUAL DEGREE PROGRAMS



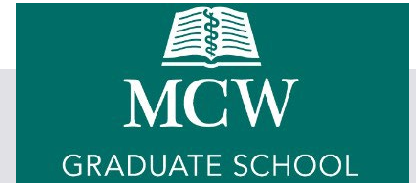
MCW

GRADUATE SCHOOL

2026-27

CLINICAL AND TRANSLATIONAL SCIENCE

Degree Offered: Master of Science Dual Degree MD/MS



Program Description

This program is operated by the Clinical and Translational Science Institute (CTSI) of Southeast Wisconsin. The mission of the CTSI is to develop an integrated, shared home for clinical and translational research and to establish a borderless, collaborative, and investigator/ community/patient- friendly, research environment. The CTS MD/MS dual degree program fits with the CTSI's strategic goals of providing quality education and training to cultivate the next generation of clinical and translational researchers.

The MD/MS in Clinical and Translational Science Program is designed for students who wish to pursue a medical career with a research focus. During the first two years of the dual degree program, students complete the basic science coursework for the MD degree. In addition, dual degree students take some coursework to meet the requirements for the MS degree. MS degree coursework emphasizes clinical study design, biostatistics, and research methods, and provides students with an opportunity to conduct a mentored research project. Some coursework meets the requirements for both degrees. Students engage in their research projects during the summer between the first and second years of study and subsequent research electives during the third and fourth years of medical school.

Upon entering the dual degree program, students have a designated faculty advisor who will provide guidance in the program and assist them in identifying an area of research that is of interest to them. During the first year of the program, students will have the opportunity to explore a wide range of research options and to identify a research mentor with whom they will work.

Admission Requirements

In addition to the general [Graduate School admission requirements](#), this program has additional specific requirements.

To enroll in the MD/MS program, applicants must first be admitted to the Doctor of Medicine program.

Fields of Study

This MS degree coursework emphasizes clinical study design, biostatistics, and research methods, and provides students with an opportunity to conduct a mentored research project.

Credits Required to Graduate

36 credits for the MS degree

Non-Course Requirements

MS non-course requirements

- [Preliminary Requirements](#)
 - Committee Approval
 - Thesis Proposal Approval
- Program Requirement: Progress Presentation
Each student meets with the CTS Thesis Committee, mid program, to provide a short presentation on their thesis project progress followed by discussion, to provide guidance and determine if progress is acceptable for the student to meet the completion timeline.
- Application for Graduation in MCWconnect
- [Degree Completion Requirements](#)

Program Credit Requirements

The MS in Clinical and Translational Science credit requirements consists of 36 credit hours. 27 credits are from required courses; 9 credits are from thesis hours. The MD/MS program is designed to be completed in four (4) academic years.

Reference the Medical School Academic Bulletin for MD credit and course requirements.

Required Courses

MS course requirements

Fall Year M1

CTSI 20101 Introduction to Clinical and Translational Science. 3 credits.

CTSI 20220 Clinical Statistics I. 3 credits.

Spring Year M1

CTSI 20160 Foundations in Health Services Research. 3 credits.

BIOE 10226 Regulatory Issues in Human Subject Research Protections. 3 credits.

Summer Year M1

CTSI 20290 Research Elective. 3 credits.

Fall Year M2

CTSI 20151 Introduction to Epidemiology. 3 credits.

Elective. 3 credits. *(Review suggested electives below)*

Spring Year M2

CTSI 20302 Research Seminar. 3 credits.

Fall Year M3

Elective. 3 credits. *(Review suggested electives below)*

Spring Year M3

CTSI 20299 Master's Thesis. 3 credits.

Fall Year M4

CTSI 20299 Master's Thesis. 3 credits.

Spring Year M4

CTSI 20299 Master's Thesis. 3 credits.

Suggested Elective Courses

CTSI 20241 Translational Genomics. 3 Credits.

CTSI 20253 Methods in Grant Preparation. 3 Credits.

CTSI 20260 Introduction to Dissemination and Implementation Science. 3 credits.

GLHE 29150 Global Environmental Health. 3 Credits.

GLHE 29275 Global Health Consulting and Research Methods. 3 Credits.

PRME 42145 Omics Technology in Precision Medicine. 3 Credits.

PRME 42170 Medical Genetics, Undiagnosed, and Rare Diseases

PRME 42175 Pharmacogenomics for Precision Medicine. 3 Credits.

PRME 42185 Cancer Precision Medicine. 3 Credits.

PUCH 19210 Health and Medical Geography. 3 Credits.

PUCH 19235 Data Management and Use for Public and Community Health. 3 Credits.

PUCH 19260 Implementation Research Methods. 3 Credits.

PUCH 19280 Advanced Program Evaluation for Public Health. 3 Credits.

Course Descriptions

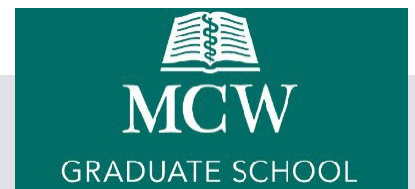
View the [Graduate School Course Catalog](#) for course descriptions.

Contact information: gradschool@mcw.edu | (414)955-8218

2026-27

4+1 DUAL DEGREE PROGRAM

Degree Offered: Master of Science in Global Health Equity



Program Description

This dual degree program offers undergraduate students the opportunity to accelerate the completion of the Masters of Science Global Health Equity degree by taking graduate courses during their senior year that count for completion of the Bachelor's degree and Master's degree at MCW.

The Master of Science in Global Health Equity program at the Medical College of Wisconsin was created to meet the growing demand of global health professionals. Our small cohorts make it possible for local and intentional mentoring from faculty who have a wide range of global health experience. Students will conduct a global health project with one of our local or international partners. Our flexible, interactive program allows students to choose from a variety of elective courses to gain expertise in areas they are most interested in. Full-time and part-time study are allowed.

Admission Requirements

In addition to the general [Graduate School admission requirements](#), this program has specific requirements as defined by the undergraduate institution and MCW.

Students should have a strong foundation in quantitative, behavioral, and biological sciences

Credits Required to Graduate

36 credits

Non-Course Requirements

- [Preliminary Requirements](#)
 - Committee Approval
 - Thesis Proposal Approval
- Application for Graduation in MCWconnect
- [Degree Completion Requirements](#)

Required Courses

GLHE 29219 Introduction to Global Health Equity. 3 *credits*.

PUBH 18204 Public Health Analytics. 3 *credits*.

OR PUCH 19225 Introduction to Statistical Analysis. 3 *credits* (in-person)

GLHE 29232 Interprofessional Foundations of Public Health research methods. 3 *credits*. GLHE

29236 Digital Storytelling for Public Health. 1 *credit*.

GLHE 29239 Ethics and Global Health. 3 *credits*.

GLHE 29279 Internship Preparation: Cultural and Ethical Global Engagement. 1 *credit*.

GLHE 29290 Global Health Equity Internship. 2 *credits*.

GLHE 29299 Master's Thesis Work. (Variable 1-6 *credits*, 6 *credits* total)

PUBH 18165 Principles of Public Health Data and Epidemiology. 3 *credits*.

OR PUCH 19150 Introduction to Epidemiology. 3 *credits*. (in-person)

Electives. *11 credits.* (Review suggested electives below. Alternate Electives Approved by Program Director)

Suggested Elective Courses

GLHE 29100 Community Health Needs Assessment. *2 credits.*
GLHE 29110 Introduction to Chronic Diseases in Global Health. *2 credits.*
GLHE 29160 Infectious Disease Epidemiology. *2 credits.*
GLHE 29165 Ethics in Qualitative Research. *2 credits.*
GLHE 29235 Fragile Lives: Understanding Vulnerability in Old Age. *2 credits.*
GLHE 29237 Global Health Issues: Moving from Evidence to Impact. *3 credits.*
GLHE 29238 Global Health Initiatives. *2 credits.*
GLHE 29240 Multicultural Mental Health Guidelines in Native American Populations. *3 credits.*
GLHE 29242 Planetary Health. *3 credits.*
GLHE 29245 Health and Forced Migration. *2 credits.*
GLHE 29250 How to Build Health Research Partnerships with Native American Communities. *2 credits.*
GLHE 29275 Global Health Consulting and Research Methods. *3 credits.*
GLHE 29280 Career Development. *1 credit.*
GLHE 29295 Readings and Research. *1-2 credits.*
GLHE 29325 Global Maternal and Child Health. *2 credits.*

Electives offered online through other MCW Programs:

BIOE 10203 Justice and Health Care. *3 credits.*
PUBH 18115 Health Promotion and Disease Prevention. *3 credits.*
PUBH 18150 Public Health Law and Ethics. *3 credits.*
PUBH 18155 Public Health Theory and Practice. *3 credits.*
PUBH 18160 Racial and Ethnic Inequalities in Health. *3 credits.*
PUBH 18203 Public Health Administration. *3 credits.*
PUBH 18204 Public Health Analytics. *3 credits.*
PUBH 18209 Community Health Assessment and Improvement. *3 credits.*
PUBH 18215 Infectious Diseases. *3 credits.*
PUBH 18221 Public Health Law. *3 credits.*
PUBH 18223 Public Health Policy. *3 credits.*
PUBH 18230 Community Health Program Planning. *3 credits.*
PUBH 18232 Intro to Population Health Management. *3 credits.*
PUBH 18241 Health Communications. *3 credits.*
PUBH 18260 Community Health Program Evaluation. *3 credits.*
PUBH 18268 Leadership for the Public's Health. *3 credits.*

Electives offered in person at MCW:

PUCH 19152 Global Environmental Health. *3 credits.*
PUCH 19202 Community Health Improvement II: Health Disparities and Underlying Determinants of Health. *3 credits.*
PUCH 19203 Community Health Improvement III: Principles and Practices of Community-Academic Partnerships. *3 credits.*
PUCH 19204 Community Health Improvement IV: Translating Community Health Improvement into Policy. *3 credits.*
PUCH 19210 Health and Medical Geography. *3 credits.*
PUCH 19229 Survey Research Methods. *3 credits.*
PUCH 19250 Human Health Risk Assessment and Environmental Health Literacy. *3 credits.*
PUCH 19260 Implementation Research Methods. *3 credits.*

PUCH 19235 Data Management and Use for Public and Community Health. 3 credits
PUCH 19230 Qualitative and Mixed Methods. 3 credits.

Electives offered in-person at Marquette University:

5461 Comparative Health Politics and Policy. 3 *credits*.

7150 Outbreaks, Epidemics and Pandemics. 3 *credits*.

7931 Politics of US Health Care. 3 *credits*.

Course Descriptions

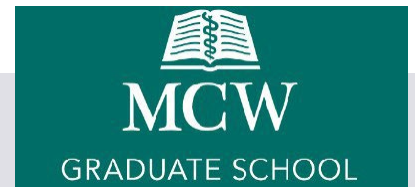
View the [Graduate School Course Catalog](#) for course descriptions.

Contact information: gradschool@mcw.edu | (414) 955-8218

2026-27

4+1 DUAL DEGREE PROGRAM

Degree Offered: Master of Public Health



Program Description

This program allows undergraduate students at partner schools to pursue graduate coursework online. Up to 15 credits of this graduate work may count towards both the undergraduate and graduate degrees. After earning the undergraduate degree, students continue as graduate students at MCW for approximately one additional year until they complete the Master of Public Health program. The curriculum focuses on public health practice and consists of four core courses, seven additional required courses, one elective course, a field placement experience, and a capstone project. Assignments require the application of theoretical concepts to practical situations through case analysis and experiential activities.

Admission Requirements

In addition to the general [Graduate School admission requirements](#), this program has specific requirements as defined by the undergraduate institution and MCW.

Credits Required to Graduate

42 credits

Non-Course Requirements

- Application for Graduation in MCWconnect
- [Degree Completion Requirements](#)

Required Courses

PUBH 18101 Foundations of Public Health. *3 credits.*
PUBH 18155 Public Health Theory & Practice. *3 credits.*
PUBH 18160 Racial and Ethnic Inequalities in Health. *3 credits.*
PUBH 18165 Principles of Public Health Data and Epidemiology. *3 credits.*
PUBH 18203 Public Health Administration. *3 credits.*
PUBH 18204 Public Health Analytics. *3 credits.*
PUBH 18209 Community Health Assessment and Improvement. *3 credits.*
PUBH 18223 Public Health Policy. *3 credits.*
PUBH 18230 Community Health Program Planning. *3 credits.*
PUBH 18260 Community Health Program Evaluation. *3 credits.*
PUBH 18268 Leadership for the Public's Health. *3 credits.*
PUBH 18279 Field Placement Preparation. *1 credit.*
PUBH 18280 Field Placement. *2 credits.*
PUBH 18297 Capstone Project. *3 credits.*

Electives. *3 credits. (Elective options below)*

Elective Courses

PUBH 18115 Health Promotion and Disease Prevention. *3 credits.*
PUBH 18150 Public Health Law and Ethics. *3 credits.*

PUBH 18215 Infectious Diseases. 3 *credits*.

PUBH 18232 Population Health Management. 3 *credits*.

PUBH 18241 Health Communications. 3 *credits*.

Course Descriptions

View the [Graduate School Course Catalog](#) for course descriptions.

Contact information: gradschool@mcw.edu | (414) 955-8218

MASTER'S PROGRAMS



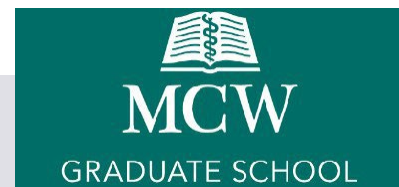
MCW

GRADUATE SCHOOL

2026-27

BIOETHICS

Degree Offered: Master of Arts



Program Description

The Master of Arts in Bioethics Program provides advanced training in bioethics for professional, academics, and other interested individuals in health care, law, the humanities, and public policy who wish to become prepared for teaching, research, policy development, and/or clinical work in the field of bioethics. The program curriculum consists of a robust combination of theoretical and clinical course offerings that provide a strong foundational knowledge base upon which students develop the skills and understanding necessary to analyze and address the difficult and evolving ethical issues encountered in health care today.

Admission Requirements

[Graduate School admission requirements.](#)

Credits Required to Graduate

30 credits

Program Credit Requirements

The Master of Arts in Bioethics Program has three main components: (1) Required Courses, (2) Clinical Bioethics Experience, and (3) Master's Thesis or Final Paper.

The curriculum for the Master of Arts in Bioethics program requires completing a total of 30 credits. Students should aim to complete the required courses (10210, 10209, 10223) early in their program, as they provide the foundation for the electives and the comprehensive exam.

The remaining credits of the program are elective courses of the student's choosing and may include credits for the Master's Thesis, if a student chooses to write a thesis.

Once the core curriculum (10209, 10210, 10223) and elective credits combined reach a total minimum of 24 credits, each student will complete a written comprehensive examination. This exam is designed to challenge the student's ability to critically analyze selected bioethical issues in depth.

Master's Thesis or Final Paper

Students choose to write either a traditional Master's Thesis or a Final Paper at the culmination of the program. Students choosing the Master's Thesis will earn six credits for their research and writing work. Students choosing the Final Paper must complete six additional course credits in lieu of the Master's Thesis credits in addition to writing a paper of publishable quality.

When all the course credit requirements have been met, the Comprehensive Exam has been completed successfully, and with the Master's thesis or final paper submitted, the Program will be completed by means of a successful oral defense of either the Master's thesis or the final paper.

Non-Course Requirements

Thesis

- [Report of Comprehensive Exam](#)
- [Preliminary Requirements](#)
 - Committee Approval
 - Research Proposal Approval
- Application for Graduation in MCWconnect
- [Degree Completion Requirements](#)

Final Paper

- [Report of Comprehensive Exam](#)
- Application for Graduation in MCWconnect
- [Degree Completion Requirements](#)

Required Courses (Thesis)

BIOE 10209 Clinical Topics in Bioethics. 3 credits.

BIOE 10210 Philosophical Bioethics. 3 credits.

BIOE 10223 Law and Bioethics. 3 credits.

BIOE 10299 Master's Thesis. 1-6 credits.

BIOE 10231 Bioethics Consulting and Committees. 1 credit. (Course waived for those with professional experience in clinical bioethics)

Electives. 15 credits. (Review suggested electives below. Only 14 credits if student took BIOE 10231 Bioethics Consulting and Committees)

Required Courses (Final Paper)

BIOE 10209 Clinical Topics in Bioethics. 3 credits.

BIOE 10210 Philosophical Bioethics. 3 credits.

BIOE 10223 Law and Bioethics. 3 credits.

BIOE 10231 Bioethics Consulting and Committees. 1 credit. (Course waived for those with professional experience in clinical bioethics)

Electives. 21 credits. (Review suggested electives below. Only 20 credits if student took BIOE 10231 Bioethics Consulting and Committees)

Elective Courses

BIOE 10200 Clinical Bioethics I. 3 credits.

BIOE 10203 Justice and Healthcare. 3 credits.

BIOE 10205 Introduction to Hospital Medicine. 3 credits.

BIOE 10206 Ethics and the Law. 3 credits.

BIOE 10207 Introduction to Research Ethics. 3 credits.

BIOE 10211 Ethics Beyond the Acute Care Hospital. 3 credits.

BIOE 10216 Race and Trust in Biomedical Research. 3 credits.

BIOE 10220 Critical Approaches to Bioethics. 3 credits.

BIOE 10222 Ethics and Integrity in Science. 1 credit.

BIOE 10225 Religion and Bioethics. 3 credits.

BIOE 10226 Regulatory Issues in Human Subjects Research Protections. 3 credits.

BIOE 10228 Current Topics in Research Ethics. 3 credits.

BIOE 10231 Bioethics Consulting and Committees. 1 credit.

BIOE 10233 Issues in Pediatric Ethics. 3 credits.

BIOE 10234 Ethics and Human Reproduction. 3 credits.

BIOE 10240 History & Meaning of Ethics Professionalism in Medicine. 3 *credits*.
BIOE 10275 Special Topics in Bioethics. 3 *credits*.
BIOE 10295 Reading and Research. 1-3 *credits*.
BIOE 10297 Master's Consultation. 1-2 *credits*.
BIOE 10298 Journal Club. 1 *credit*.
BIOE 10444 Research Ethics Discussion Series. 1 *credit*.

Course Descriptions

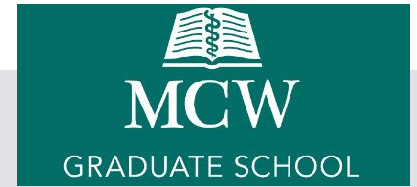
View the [Graduate School Course Catalog](#) for course descriptions.

Contact information: gradschool@mcw.edu | (414) 955-8218

2026-27

BIOINFORMATICS

Degree Offered: Master of Science in partnership with Marquette University



Program Description

This interdisciplinary program is jointly offered by Marquette University and Medical College of Wisconsin. The program prepares students for a multidisciplinary career in the biomedical sciences using mathematics, statistics and computer science. It is designed to provide students quantitative tools for analyzing data and problems associated with molecular, cellular, physiological and particularly, genetic systems. Students may select courses from a list of approved courses offered by the following departments at Marquette: Computer Science; Mathematical and Statistical Sciences; Biology; Biomedical Engineering; and Electrical and Computer Engineering. In addition, courses are offered by the Department of Physiology and the Division of Biostatistics at Medical College of Wisconsin. The program meets the needs of recent undergraduates seeking an advanced degree as well as employed professionals interested in opportunities for career advancement.

Students may pursue the degree on a full-time or part-time basis. Many courses are offered evenings.

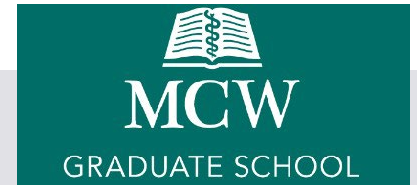
Learn more [here](#).

Contact information: gradschool@mcw.edu | (414) 955-8218

2026-27

BIOMEDICAL ENGINEERING

Degree Offered: Master of Science in partnership with Marquette University



Program Description

The [MU-MCW biomedical engineering program](#) is interdisciplinary in nature, involving the application of engineering and mathematics to the solution of problems related to medicine and biology. The faculty reflect this interdisciplinary nature in their courses and research. MU faculty are synergistically complemented by faculty from the MCW. The Department of Biomedical Engineering fosters collaborative interactions between the two institutions. Research can be characterized by the general areas of bioinstrumentation, biomechanics, biomedical imaging, cellular and molecular engineering, computational biology and bioinformatics, and rehabilitation bioengineering.

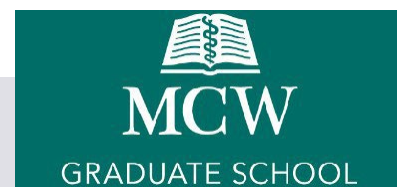
Learn more [here](#).

Contact information: gradschool@mcw.edu | (414) 955-8218

2026-27

BIostatISTICS & DATA SCIENCE

Degree Offered: Master of Arts



Program Description

The Master of Arts program in Biostatistics and Data Science provides a learning experience focused on solid theoretical foundation and practical experience. Robust course offerings, active engagement in statistical consulting, and a capstone project create ample opportunities to develop essential analytical skills. Consulting projects ranging from the simplest statistical summaries to the most complex protocols and data collection schemes allow students to get experience of working with real data analysis projects from start to finish. This hands-on experience will enable students to synthesize the acquired knowledge and integrate various courses they have taken. In the process, students will create a portfolio which demonstrates competency in data analysis, statistical programming, consulting experience with non-statisticians, oral and written communication skills.

The curriculum consists of eight required biostatistics courses which have been identified as an essential knowledge base for all students in the program. Also required, is an Ethics and Integrity in Science course. The capstone project course can be taken throughout multiple semesters but at least 3 credit hours are required for graduation. The program allows students to choose two or more elective courses which best reflect their personal interests.

Students may pursue the degree on a full-time or part-time basis.

Admission Requirements

In addition to the general [Graduate School admission requirements](#), this program has specific requirements:

- Any graduate of an accredited college or university with an undergraduate degree in mathematics, statistics, or related field with strong preparation in mathematics is eligible for admission.
- Prior coursework in calculus (including integrals, such as Calculus II), probability and/or statistics, linear/matrix algebra, and computer programming experience.

Credits Required to Graduate

30 credits

Non-Course Requirements

- Application for Graduation in MCWconnect
- [Degree Completion Requirements](#)

Required Courses

BIOE 10222 Ethics and Integrity in Science. 1 credit.

BIOS 04223 Biomedical Applications and Consulting 2. 2 credits.

BIOS 04224 Biostatistical Computing. 3 credits.

BIOS 04231 Statistical Models and Methods I. 3 credits.

BIOS 04232 Statistical Models and Methods II. 3 credits.

BIOS 04233 Introduction to Statistical and Machine Learning. 3 credits.

BIOS 24150 Bioinformatics in Omics Analysis. 3 credits.

BIOS 24160 Concepts in Probability and Statistics. 3 credits.

OR **PH712 Probability and Statistical Inference. 3 credits. (UW-Milwaukee Course)

BIOS 24297 Capstone Project. 1-3 credits.

Electives. 6 credits.

Analysis Elective. 3 credits. Choose from the following:

BIOS 04214 Design and Analysis of Clinical Trials. 3 credits.

BIOS 04275 Applied Survival Analysis. 3 credits.

BIOS 04285 Introduction to Bayesian Analysis. 3 credits.

General Elective. 3 credits. (Review elective options below)

Elective Courses

BIOS 04214 Design and Analysis of Clinical Trials. 3 credits.

BIOS 04222 Statistical Consulting. 3 credits.

BIOS 04275 Applied Survival Analysis. 3 credits.

BIOS 04285 Introduction to Bayesian Analysis. 3 credits.

PUBH 18201 Principles of Public Health Data and Epidemiology. 3 credits.

PUBH 18258 Advanced Epidemiological Methods. 3 credits.

PUCH 19150 Introduction to Epidemiology. 3 credits.

PUCH 19210 Health and Medical Geography. 3 credits.

PUCH 19229 Survey Research Methods. 3 credits.

CTSI 20151 Introduction to Epidemiology. 3 credits.

Elective offered through UW-Milwaukee:

[PH 810 Fundamentals and Applications of Structural Equation Modeling](#). 3 credits.

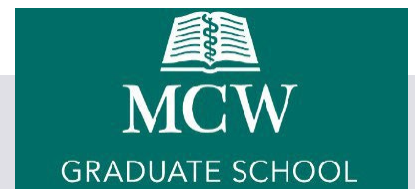
Course Descriptions

View the [Graduate School Course Catalog](#) for course descriptions.

2026-27

CLINICAL & TRANSLATIONAL SCIENCE

Degree Offered: Master of Science



Program Description

This program is operated by the Clinical and Translational Science Institute (CTSI) of Southeast Wisconsin. The mission of the CTSI is to develop an integrated, shared home for clinical and translational research and to establish a borderless, collaborative, and investigator/community/patient- friendly, research environment. The CTS Master's and Certificate degree programs fit with the CTSI's strategic goals of providing quality education and training to cultivate the next generation of clinical and translational researchers.

The goal of the Master's in Clinical and Translational Science (MSCTS) degree is to train the next generation of health care professionals, clinical investigators, research scientists, and other individuals working in translational research sciences. The curriculum incorporates the full spectrum of the translational continuum (T0 through T5) and provides training and skills to position candidates to be successful in the growing field of Clinical and Translational Science. Topics covered include foundations of translational research, clinical statistics, epidemiology, ethics and safety, and study designs across the continuum. Candidates seeking a Master's degree will select from one of four emphasis tracks and complete a thesis.

Admission Requirements

[Graduate School admission requirements.](#)

Credits Required to Graduate

36 credits

Fields of Study

Candidates seeking a Master's degree will select from one of three emphasis tracks and complete a thesis. The emphasis tracks include Translational Science, Population Science, and Health Systems Science.

Translational Science

This track is focused on the foundational principles of the translational process. This "bench-to-bedside" process involves moving discoveries from their basic foundation to clinical settings. Discoveries of focus include diagnostics, therapeutics, medical procedures, and other interventions. Suggested electives for this program include Translational Genomics and Survey of Biomedical Engineering.

Population Science

There are a variety of factors that can influence health outcomes at a population level, and this track will focus on the relationship between these factors, health, and research. This program will focus on factors such as socioeconomic status, health disparities, social determinants of health, healthcare systems, environment, and policies. Suggested electives include Health Economics, Introduction to Statistics using Stata, Regression using Stata, and Health and Medical Geography.

Health System Science

The focus of this track is on principles and processes within the healthcare system. The topics of focus will include delivery of healthcare, how healthcare professionals work together, and improvements that can be made within the system to improve healthcare delivery. Suggested electives for this program include Health Economics, Health and Medical Geography, Dissemination and Implementation Science, and Qualitative and Mixed Methods.

Non-Course Requirements

- [Preliminary Requirements](#)
 - Thesis Committee Approval
 - Thesis Proposal Approval
- Program Requirement: Progress Presentation
Each student meets with the CTS Thesis Committee, mid program, to provide a short presentation on their thesis project progress followed by discussion, to provide guidance and determine if progress is acceptable for the student to meet the completion timeline.
- Application for Graduation in MCWconnect
- [Degree Completion Requirements](#)

Required Courses

BIOE 10226 Regulatory Issues in Human Subject Research Protections. 3 credits.

CTSI 20101 Introduction to Clinical and Translational Science. 3 credits.

CTSI 20151 Introduction to Epidemiology. 3 credits.

CTSI 20160 Foundations in Health Services Research. 3 credits.

CTSI 20220 Clinical Statistics I. 3 credits.

CTSI 20302 Research Seminar. 3 credits.

CTSI 20299 Master's Thesis. (Variable 1-9 credits, 6-9 credits total required)

Electives. 9-12 credits. (Suggested electives below. Alternate Electives approved by Program)

Suggested Elective Courses

CTSI 20260 Introduction to Dissemination and Implementation Science. 3 credits.

CTSI 20241 Translational Genomics. 3 Credits.

CTSI 20253 Methods in Grant Preparation. 3 Credits.

PRME 42145 Omics Technology in Precision Medicine. 3 Credits.

PRME 42170 Medical Genetics, Undiagnosed, and Rare Diseases

PRME 42175 Pharmacogenomics for Precision Medicine. 3 Credits.

PRME 42185 Cancer Precision Medicine. 3 Credits.

GLHE 29150 Global Environmental Health. 3 Credits.

GLHE 29275 Global Health Consulting and Research Methods. 3 Credits.

PUCH 19210 Health and Medical Geography. 3 Credits.

PUCH 19235 Data Management and Use for Public and Community Health. 3 Credits.

PUCH 19260 Implementation Research Methods. 3 Credits.

PUCH 19280 Advanced Program Evaluation for Public Health

PUCH 19290 Critical and Analytical Writing. 3 Credits.

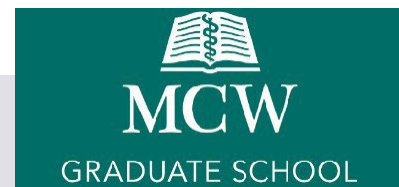
Course Descriptions

View the [Graduate School Course Catalog](#) for course descriptions.

2026-27

GENETIC COUNSELING

Degree Offered: Master of Science



Program Description

This program offers a Master of Science degree in Genetic Counseling, through the Medical College of Wisconsin Graduate School. The program is a full-time, day program with one cohort of 12 students beginning each fall term. The program offers a Milwaukee and Green Bay campus track. All 12 students will complete their first year together on the Milwaukee Campus. The two students matched to the Green Bay track will relocate to the Green Bay campus at the start of the fall semester 2nd year. The duration is 21 months in length, consisting of four fall/spring terms with one intervening summer term session. The program curriculum consists of 56 term credits, including coursework, clinical practicums, and a research thesis. Students who successfully complete the program will be eligible for the American Board of Genetic Counseling (ABGC) certification examination.

The Genetic Counseling Master of Science Program at the Medical College of Wisconsin will prepare the next generation of genetic counselors to be diverse leaders at the forefront in the delivery of precision health.

Admission Requirements

In addition to the general [Graduate School admission requirements](#), this program has additional specific requirements.

Applicants must have a bachelor's degree. Although a specific major is not required, most applicants have a degree in a biological or social science (e.g., biology, genetics, biochemistry, sociology, social work).

A minimum undergraduate grade-point average (GPA) of 3.00 or a master's degree with a minimum cumulative GPA of 3.00 is required. If a student has an undergraduate GPA less than 3.0, coursework completed after graduation demonstrating a higher GPA will be considered.

Prerequisites listed below must be completed with a grade of C or better, prior to the program start date. Applications will still be considered with coursework pending. College credit for high school Advanced Placement courses do not satisfy the requirement.

Prerequisite course work includes one semester each of the following:

- Genetics
- Statistics
- Biochemistry
- Social Science (psychology, sociology, women's studies, philosophy, ethnic studies, etc)
- Medical Terminology, Human Anatomy or Human Physiology (does not need to be taken in advance). If you match with MCW, you can take the course in the summer before matriculation. Taking an online medical terminology course for certificate completion is acceptable for this prerequisite. An example of a [self-paced course is through Rice University](#).

We encourage students to take as many courses as possible relevant to genetic counseling to strengthen their application. All required courses should be taken prior to applying as it is difficult to evaluate courses "in progress" at the time of application.

For additional information pertaining to the admissions process and requirements, we encourage you to check out the [MSGC Program Website](#)

Credits Required to Graduate

56 credits

Non-Course Requirements

- [Preliminary Requirements](#)
 - Committee Approval
 - Research Proposal Approval
- Application for Graduation in MCWconnect
- [Degree Completion Requirements](#)

Required Courses

GECO 40110 Bioethics in Precision Medicine. 3 credits.
GECO 40130 Prenatal Genetics. 3 credits.
GECO 40140 Cancer Genomics. 3 credits.
GECO 40145 Medical Genomics. 3 credits.
GECO 40150 Genetic Counseling I: Skills and Practice. 2 credits.
GECO 40155 Genetic Counseling II: Theory and Practice. 2 credits.
GECO 40156 Genetic Counseling III: Psychosocial Issues. 2 credits.
GECO 40157 Genetic Counseling IV: Advanced Topics. 2 credits.
GECO 40160 Research Methodologies. 2 credits.
GECO 40203 Molecules to Cells for Genetic Counselors. 4 credits.
GECO 40293 Clinical Practicum I. 3 credits.
GECO 40295 Clinical Practicum II. 3 credits.
GECO 40296 Clinical Practicum III. 3 credits.
GECO 40297 Clinical Practicum IV. 3 credits.
GECO 40298 Clinical Practicum V. 3 credits.
GECO 40294 Laboratory Foundations. 3 credits.
GECO 40299 Genetic Counseling Research Thesis. 1-3 credits.
GECO 40301 Genetic Counseling Seminar. 1 credit.

Required Courses as Needed

GECO 40002 Research Thesis Continuation. 0 credits.

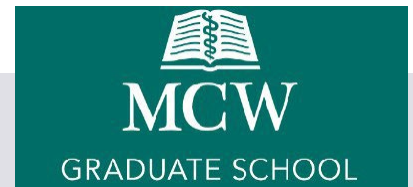
Course Descriptions

View the [Graduate School Course Catalog](#) for course descriptions.

2026-27

GLOBAL HEALTH EQUITY

Degree Offered: Master of Science



Program Description

The Master of Science in Global Health Equity program at the Medical College of Wisconsin was created to meet the growing demand of global health professionals. Our small cohorts make it possible for local and intentional mentoring from faculty who have a wide range of global health experience. Students will conduct a global health project with one of our local or international partners. Our flexible, interactive program allows students to choose from a variety of elective courses to gain expertise in areas they are most interested in. Full-time and part-time study are allowed.

Admission Requirements

In addition to the general [Graduate School admission requirements](#), this program has additional specific requirements.

Students should have a strong foundation in quantitative, behavioral, and biological sciences

Credits Required to Graduate

36 credits

Non-Course Requirements

- [Preliminary Requirements](#)
 - Committee Approval
 - Thesis Proposal Approval
- Application for Graduation in MCWconnect
- [Degree Completion Requirements](#)

Required Courses

GLHE 29219 Introduction to Global Health Equity. 3 *credits*.

PUBH 18204 Public Health Analytics. 3 *credits*.

OR PUCH 19225 Introduction to Statistical Analysis. 3 *credits* (in-person)

GLHE 29232 Interprofessional Foundations of Public Health research methods. 3 *credits*. GLHE

29236 Digital Storytelling for Public Health. 1 *credit*.

GLHE 29239 Ethics and Global Health. 3 *credits*.

GLHE 29279 Internship Preparation: Cultural and Ethical Global Engagement. 1 *credit*.

GLHE 29290 Global Health Equity Internship. 2 *credits*.

GLHE 29299 Master's Thesis Work. (Variable 1-6 *credits*, 6 *credits* total)

PUBH 18165 Principles of Public Health Data and Epidemiology. 3 *credits*.

OR PUCH 19150 Introduction to Epidemiology. 3 *credits*. (in-person)

Electives. 11 *credits*. (Review suggested electives below. Alternate Electives Approved by Program Director)

Suggested Elective Courses

GLHE 29100 Community Health Needs Assessment. 2 credits.
GLHE 29110 Introduction to Chronic Diseases in Global Health. 2 credits.
GLHE 29160 Infectious Disease Epidemiology. 2 credits.
GLHE 29165 Ethics in Qualitative Research. 2 credits.
GLHE 29235 Fragile Lives: Understanding Vulnerability in Old Age. 2 credits.
GLHE 29237 Global Health Issues: Moving from Evidence to Impact. 3 credits.
GLHE 29238 Global Health Initiatives. 2 credits.
GLHE 29240 Multicultural Mental Health Guidelines in Native American Populations. 3 credits.
GLHE 29242 Planetary Health. 3 credits.
GLHE 29245 Health and Forced Migration. 2 credits.
GLHE 29250 How to Build Health Research Partnerships with Native American Communities. 2 credits.
GLHE 29275 Global Health Consulting and Research Methods. 3 credits.
GLHE 29280 Career Development. 1 credit.
GLHE 29295 Readings and Research. 1-2 credits.
GLHE 29325 Global Maternal and Child Health. 2 credits.

Electives offered online through other MCW Programs:

BIOE 10203 Justice and Health Care. 3 credits.
PUBH 18115 Health Promotion and Disease Prevention. 3 credits.
PUBH 18150 Public Health Law and Ethics. 3 credits.
PUBH 18155 Public Health Theory and Practice. 3 credits.
PUBH 18160 Racial and Ethnic Inequalities in Health. 3 credits.
PUBH 18203 Public Health Administration. 3 credits.
PUBH 18204 Public Health Analytics. 3 credits.
PUBH 18209 Community Health Assessment and Improvement. 3 credits.
PUBH 18215 Infectious Diseases. 3 credits.
PUBH 18221 Public Health Law. 3 credits.
PUBH 18223 Public Health Policy. 3 credits.
PUBH 18230 Community Health Program Planning. 3 credits.
PUBH 18232 Intro to Population Health Management. 3 credits.
PUBH 18241 Health Communications. 3 credits.
PUBH 18260 Community Health Program Evaluation. 3 credits.
PUBH 18268 Leadership for the Public's Health. 3 credits.

Electives offered in person at MCW:

PUCH 19152 Global Environmental Health. 3 credits.
PUCH 19202 Community Health Improvement II: Health Disparities and Underlying Determinants of Health. 3 credits.
PUCH 19203 Community Health Improvement III: Principles and Practices of Community-Academic Partnerships. 3 credits.
PUCH 19204 Community Health Improvement IV: Translating Community Health Improvement into Policy. 3 credits.
PUCH 19210 Health and Medical Geography. 3 credits.
PUCH 19229 Survey Research Methods. 3 credits.
PUCH 19250 Human Health Risk Assessment and Environmental Health Literacy. 3 credits.
PUCH 19260 Implementation Research Methods. 3 credits.
PUCH 19235 Data Management and Use for Public and Community Health. 3 credits.
PUCH 19230 Qualitative and Mixed Methods. 3 credits.

Electives offered in-person at Marquette University:
5461 Comparative Health Politics and Policy. 3 *credits*.
7150 Outbreaks, Epidemics and Pandemics. 3 *credits*.
7931 Politics of US Health Care. 3 *credits*.

Course Descriptions

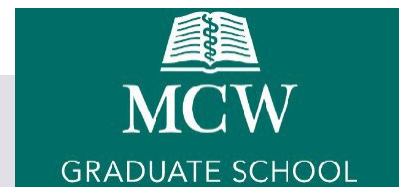
View the [Graduate School Course Catalog](#) for course descriptions.

Contact information: gradschool@mcw.edu | (414) 955-8218

2026-27

MEDICAL PHYSIOLOGY

Degree Offered: Master of Medical Physiology



Program Description

The Master's in Medical Physiology Program at MCW is a one-year special Master's program designed to help college graduates strengthen their academic credentials for medical school and other health professional programs. Our program includes MCW School of Medicine courses and exams, providing students with experience comparable to MCW medical students. Our program also includes MCAT preparation and conditional admissions interviews to the MCW School of Medicine and MCW School of Pharmacy. We maintain a small cohort size to ensure each student receives the personalized academic advising and career development they need to succeed. Graduates of this program have a solid foundation for medical school, other health professional or biomedical research programs, and jobs in academia, industry, or government positions, as supported by our strong placement data

Admission Requirements

In addition to the general [Graduate School admission requirements](#), this program has additional specific requirements.

This program requires applicants submit standardized test scores with their applications. MCAT scores are preferred, but other health professional school test scores (e.g., GRE, DAT, or PA-CAT) can be used if MCAT scores are not available.

Credits Required to Graduate

32.5 credits

Non-Course Requirements

- Application for Graduation in MCWconnect
- [Degree Completion Requirements](#)

Required Courses

Summer Term

MMPY 41100 Foundations of Medicine. *6 credits.*

MMPY 41150 Medical Humanities I: Foundation of Character Development. *0.5 credits.*

Fall Term

MMPY 41100 Foundations of Medicine. *0 credits. (Continued enrollment from Summer)*

MMPY 41110 Hematology/Immunology. *5 credits.*

MMPY 41120 Musculoskeletal/Skin. *4 credits.*

MMPY 41130 Gastroenterology and Nutrition. *5 credits.*

MMPY 41151 Medical Humanities II: Ethics, Communication, Leadership, & Wellbeing. *2 credits.*

Spring Term

MMPY 41200 Graduate Human Anatomy. *4 credits.*

MMPY 41280 Career Development Training. *2 credits.*

PHYS 08275 Special Problems in Physiology. *1 credit.*

BIOE 10222 Ethics and Integrity in Science Course. *1 credit.*

INBS 16265 Organ Systems Physiology. *2 credits.*

Optional Elective Courses

PHYS 08295 Reading and Research. *1-9 credits.*

INBS 16278 Functional Genomics. *3 credits.*

Course Descriptions

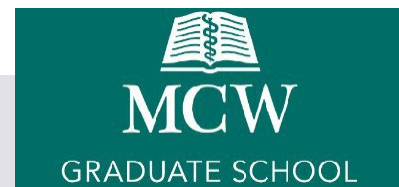
View the [Graduate School Course Catalog](#) for course descriptions.

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2026-27

PRECISION MEDICINE

Degree Offered: Master of Science



Program Description

The Precision Medicine Education program based in the Medical College of Wisconsin Institute for Health & Humanity in partnership with the Mellowes Center for Precision Medicine and Genomic Medicine offers a fully online learning experience toward a 30-credit Master of Science in Precision Medicine (PM) degree. Participants in the program will advance their knowledge, skills, practices, and competencies in PM. Learners may also enroll in courses as non-degree-seeking students.

Admission Requirements

[Graduate School admission requirements.](#)

Credits Required to Graduate

30 credits

Non-Course Requirements

- [Preliminary Requirements](#)
 - Committee Approval
 - Thesis Proposal Approval
- Application for Graduation in MCWconnect
- [Degree Completion Requirements](#)

Required Courses

PRME 42100 Introduction to Precision Medicine. 3 credits.

PRME 42283 Precision Medicine Research Plan. 3 credits.

OR GLHE 29232 Interprofessional Foundations of Public Health research methods. 3 credits.

PRME 42299 Precision Medicine Master's Thesis. 3 credits.

Electives. 21 credits. (Review elective options below)

Suggested Elective Courses

PRME 42145 Omics Technology in Precision Medicine. 3 credits.

PRME 42170 Medical Genetics, Undiagnosed, and Rare Diseases. 3 credits.

PRME 42175 Pharmacogenomics for Precision Medicine. 3 credits.

PRME 42185 Cancer Precision Medicine. 3 credits.

CTSI 20241 Translational Genomics. 3 credits.

GECCO 40110 Bioethics in Precision Medicine. 3 credits.

INBS 16270 Integrated Microbiology and Immunology. 3 credits.

PUBH 18203 Public Health Administration. 3 credits.

PUBH 18223 Public Health Policy. 3 credits.

PUBH 18232 Introduction to Population Health Management. 3 credits.

Elective offered through UW-Milwaukee:

[HI-700 Introduction to Health Care Informatics](#). 3 credits.

Elective offered through MCW/Marquette University:
[BIIN 17150 Bioinformatics of Systems Biology](#). 3 credits.

Alternate electives options approved by Program.

Course Descriptions

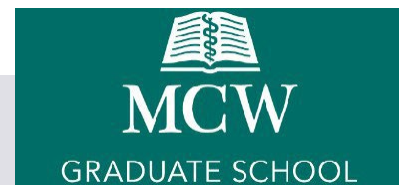
View the [Graduate School Course Catalog](#) for course descriptions.

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2026-27

PUBLIC HEALTH

Degree Offered: Master of Public Health



Program Description

This program allows students the flexibility to pursue graduate coursework online. It provides active learning opportunities through online technologies and interactive methods. Students may choose full or part-time study but should plan to complete the program within 5 years. The curriculum focuses on public health practice and consists of four core courses, six additional required courses, two elective courses, a field placement experience, and a capstone project. Assignments require the application of theoretical concepts to practical situations through case analysis and experiential activities.

Admission Requirements

[Graduate School admission requirements.](#)

Credits Required to Graduate

42 credits

Non-Course Requirements

- Application for Graduation in MCWconnect
- [Degree Completion Requirements](#)

Required Courses

PUBH 18155 Public Health Theory & Practice. 3 credits.
PUBH 18160 Racial and Ethnic Inequalities in Health. 3 credits.
PUBH 18165 Principles of Public Health Data and Epidemiology. 3 credits.
PUBH 18203 Public Health Administration. 3 credits.
PUBH 18204 Public Health Analytics. 3 credits.
PUBH 18209 Community Health Assessment and Improvement. 3 credits.
PUBH 18223 Public Health Policy. 3 credits.
PUBH 18230 Community Health Program Planning. 3 credits.
PUBH 18260 Community Health Program Evaluation. 3 credits.
PUBH 18268 Leadership for the Public's Health. 3 credits.
PUBH 18279 Field Placement Preparation. 1 credit.
PUBH 18280 Field Placement. 2 credits.
PUBH 18297 Capstone Project. 3 credits.

Electives. 6 credits. (*Elective options below*)

Elective Courses

PUBH 18101 Foundations of Public Health. 3 credits.
PUBH 18115 Health Promotion and Disease Prevention. 3 credits.
PUBH 18150 Public Health Law and Ethics. 3 credits.
PUBH 18215 Infectious Diseases. 3 credits.
PUBH 18232 Population Health Management. 3 credits.
PUBH 18241 Health Communications. 3 credits.

Course Descriptions

View the [Graduate School Course Catalog](#) for course descriptions.

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