

GRADUATE TRAINING IN MEDICAL SCIENCE, CERTIFICATE

This program is only available to students currently enrolled in a PhD program in the Perelman School of Medicine.

The Graduate Training in Medical Science (GTMS) Certificate Program complements our existing doctoral programs in Biomedical Graduate Studies. The GTMS program was specifically designed for students who want to explore human biology and pursue research training at the interface of basic science and medicine. The GTMS program augments graduate training by offering courses that bridge basic and medical science and provides a foundation in the molecular basis of disease.

The GTMS program currently consists of 6 courses (4 required and 2 electives) and a 40 hour clinical clerkship experience. The curriculum requirements change from time to time to keep the program up to date and meeting the student needs.

Code	Title	Course Units
Required Courses		
BIOM 5020	Molecular Basis of Disease	1
BIOM 6000	Cell Biology	1
CAMB/PHRM 5320	Human Physiology	1
Select one of the following:		1
CAMB 5100	Immunology for CAMB	
IMUN 5060	Immune Mechanisms	
GCB 5350	Introduction to Bioinformatics	
GCB 5360	Fundamentals of Computational Biology	
'Bench to Bedside' Electives		
Select two of the following: ¹		2
BMB 5180/ CAMB 6150/ NGG 6150	Protein Conformation Diseases	
CAMB 5120	Cancer Biology and Genetics	
CAMB 5300	The Cell Cycle, Genome Integrity and Cancer	
CAMB 5420	Topics in Molecular Medicine	
CAMB 5500	Genetic Principles	
CAMB 6080	Regulation of Eukaryotic Gene Transcription	
CAMB 6090	Vaccines and Immune Therapeutics	
CAMB 6100	Molecular Basis of Gene Therapy and Genome Editing	
CAMB 6170	Emerging Infectious Diseases	
CAMB 6970	Biology of Stem Cells	
CAMB 7010	Tumor Microenvironment	
CAMB 7030	Mechanobiology of the Cell and its Microenvironment	
CAMB 7040	Stress Responses in Metabolism and Cancer	

CAMB 7120	Topics in Cancer Biology	
IMUN 5070	Immunopathology	
NGG 6180	Recovery After Neural Injury	
PHRM 5900	Molecular Toxicology: Chemical and Biological Mechanisms	
PHRM 6230	Fundamentals of Pharmacology	
PHRM 6240	Medical Pharmacology	
Total Course Units		6

1

Any elective with clinical relevance may be a Bench to Bedside elective, subject to approval from the Program Directors. This list will be updated annually as new courses with clinical relevance may be offered and students are encouraged to suggest courses that they think will enrich their GTMS education.

Non-Course Requirements:

Monthly seminar series

40-hour clinical clerkship

The degree and major requirements displayed are intended as a guide for students entering in the Fall of 2022 and later. Students should consult with their academic program regarding final certifications and requirements for graduation.