

# PHYSIOLOGY (MS)

## Master of Science in Physiology

Unit: School of Medicine (<http://louisville.edu/medicine/>) (GM)  
 Department Website: <http://louisville.edu/medicine/departments/physiology/>  
 Program Website (<http://louisville.edu/medicine/departments/physiology/degrees/ms-pb/>)  
 Academic Plan Code(s): PHZBMS, PHZBMS O

## Program Information

The Department of Physiology is located in the Health Sciences Center of the University of Louisville which provides our graduate students with an active and intellectually stimulating environment. Our Graduate Program offers a Master of Science degree to provide several career options:

1. To develop competence for advanced technical positions in industry, government, and university medical laboratories and to enhance physiologic-based competencies in various medical professions;
2. To prepare students with a good general knowledge of human physiology to enable them to communicate physiological concepts to future students, patients, and professionals;
3. To explore the possibility of a future career as an independent scientist in medically-related research, and
4. To enhance student credentials for admission to and performance in professional health care programs.

### Minimal Requirements for the Master's Degree

The typical Master of Science (MS) Graduate Program consists of 30 credit hours typically over a ten-month period (three semesters) for the On-Campus program or 30 credit hours over an extended (up to 4 years) period for the On-Line program to include the following: 16 credit hours of basic medical sciences coursework and at least 14 credit hours of electives.

### Advisor Selection

The Director of Graduate Studies will assess the new student's academic interests to guide the student in selection of a Faculty Program Advisor.

## Admission Requirements

The University of Louisville graduate catalog gives a general description of admission procedures. Application information can be found on the Graduate School website.

The following application items must be submitted to the Graduate School at the University of Louisville:

1. Graduate application (<https://graduate.louisville.edu/admission/apply/>).
2. One official transcript of the applicant's previous work for each college or university that has been previously attended.
3. Two letters of recommendation from people who are well acquainted with the applicant's previous academic work.
4. TOEFL, IELTS or Duolingo examination scores for foreign students from non-English speaking countries.
5. A non-refundable application fee to the University of Louisville.

Applicants must state in a letter to the Department but submitted to the Graduate School (referred to as the Personal Statement in the application materials), why they desire a MS degree in the Department of Physiology.

Successful applicants generally demonstrate the following:

- A cumulative undergraduate grade point average that is usually 2.8 or higher on a scale of 4.00 (A=4, B=3, etc.)
- In the case of a foreign applicant from a non-English speaking country, the applicant must achieve a TOEFL Examination score >85 on the internet exam.

## Program Requirements

At least 30 credit hours (16 Required and 14 Elective credit hours) beyond the baccalaureate degree are required for the degree of Master of Science. A maximum of six (6) credit hours may be credited from post-baccalaureate work in other professional or graduate degree programs.

### Minimum Course Requirements

The typical MS program must include the following courses taken on a grade basis:

Code	Title	Hours
PHZB 640	Systemic Membrane, Nerve, and Muscle Physiology	3
PHZB 641	Systemic BF, Heart, and Circulatory Physiology	3
PHZB 642	Systemic Respiratory, Renal, & Acid -Base Physiology	3
PHZB 643	Systemic Endocrine, Reproductive, and Gastrointestinal Physiology	3
Complete 4 credits from the following:		
BIOC 645	Advanced Biochemistry I <sup>1</sup>	4
	PHZB 638: Physiologic Biochemistry of Proteins and Nucleic Acids <sup>2</sup>	
	PHZB 639: New Physiologic Biochemistry of Carbohydrates and Lipids <sup>2</sup>	
	Electives (see list below)	14
<b>Minimum Total Hours</b>		<b>30</b>

<sup>1</sup> Required for students enrolled in the on-campus (face-to-face) program.

<sup>2</sup> Required for students enrolled in the online program.

### Academic Performance

A student must have at least a 3.0 accumulated GPA to be graduated with a degree of Master of Science in Physiology. In general, a student with a GPA less than 3.0 at the end of the second semester will require a two-thirds majority vote of the Departmental faculty to continue in the Program. A student may not graduate with more than six (6) credit hours of C grades in their required courses.

### Electives

All electives must be graduate-level courses. Electives may include but are not limited to:

Code	Title	Hours
<i>Fall Electives</i>		
PHZB 604	Stem Cell Biology and Regenerative Medicine	2
PHZB 607	Principles of Presentations: Self, Science, Interviews	2
PHZB 630	Biomedical Applications of Physiology in the Eye	2
PHZB 617	Seminar in Physiology and Biophysics <sup>1</sup>	1

PHZB 619	Research <sup>1</sup>	1-2
<i>Spring Electives</i>		
PHZB 608	Physiological Concepts Related to the Metabolic Syndrome	2
PHZB 611	Advanced Human Cardiovascular Physiology	2
PHZB 621	Physiological Adaptions to Exercise, Immobility and Inactivity	2
PHZB 630	Biomedical Applications of Physiology in the Eye	2
PHZB 616	Selected Topics in Physiology and Biophysics <sup>1</sup>	1-6
PHZB 617	Seminar in Physiology and Biophysics <sup>1</sup>	1
PHZB 619	Research <sup>1</sup>	1-4
<i>Summer Electives</i>		
PHZB 644	Cardio Pulmonary Clinical Physiology	3
PHZB 645	Gastrointestinal Renal Endocrine Clinical Physiology	3
PHZB 619	Research <sup>1</sup>	1-6

<sup>1</sup> These courses are only available for the on-campus program.

**Other Potential Graduate Elective Course Areas:**

Biostatistics  
 Cancer Biology  
 Cell Biology  
 Communications  
 Immunology  
 Molecular Microbiology  
 Oral Biology  
 Pharmacology  
 Physiology Seminar and Research  
 Psychology  
 Public Health  
 Sociology