

# INTEGRATIVE AND BIOMEDICAL PHYSIOLOGY

## Degree Requirements

### Master of Science (M.S.)

Requirements listed here are in addition to Graduate Council policies listed under GCAC-600 Research Degree Policies. (<https://gradschool.psu.edu/graduate-education-policies/>)

M.S. degree students must complete a minimum of 30 credits for the degree, including 21 core credits in:

Code	Title	Credits
<b>Required Courses</b>		
PHSIO 571	Integrative and Cellular Mammalian Physiology I	3
PHSIO 572	Integrative and Cellular Mammalian Physiology II Endocrine Physiology	3
NUTR 501	Regulation of Nutrient Metabolism I	4
MCIBS 591	Ethics, Rigor, Reproducibility and Conduct of Research in the Life Sciences	2
STAT 500	Applied Statistics	3
	3 credit course in immunology	3
	3-credit course in molecular biology	3
<b>Total Credits</b>		<b>21</b>

At least 6 credits in thesis research (PHSIO 600 or PHSIO 610) must be taken in conjunction with the thesis. The thesis must be accepted by the advisers and/or committee members, the head of the graduate program, and the Graduate School, and the student must pass a thesis defense which includes a public presentation. Students in the non-thesis option must write a satisfactory scholarly paper, while enrolled in PHSIO 596.

### Doctor of Philosophy (Ph.D.)

Requirements listed here are in addition to Graduate Council policies listed under GCAC-600 Research Degree Policies. (<https://gradschool.psu.edu/graduate-education-policies/>)

All candidates must complete rotations in physiology laboratories before choosing an area of specialization. Possible areas of specialization include cellular, molecular, animal or human aspects of the following:

- cardiovascular and respiratory physiology
- comparative physiology
- environmental physiology
- exercise physiology
- muscle physiology
- physiology of nutrition and metabolism
- immunology
- neurophysiology
- reproductive physiology

Students in the Ph.D. program must successfully pass the qualifying, comprehensive, and final oral examination (the dissertation defense) required by Graduate Council. To earn the Ph.D. degree, doctoral students must also write a dissertation that is accepted by the Ph.D. committee, the head of the graduate program, and the Graduate School. The Ph.D. committee shall be appropriately represented by members of the

Integrative and Biomedical Physiology faculty and those of the area of specialization who shall have the responsibility and jurisdiction for determining the course program and research acceptable in satisfying degree requirements.

The doctoral degree in Integrative and Biomedical Physiology requires a minimum of 30 credits, including:

Code	Title	Credits
<b>Required Courses</b>		
PHSIO 571	Integrative and Cellular Mammalian Physiology I	3
PHSIO 572	Integrative and Cellular Mammalian Physiology II Endocrine Physiology	3
NUTR 501	Regulation of Nutrient Metabolism I	4
MCIBS 591	Ethics, Rigor, Reproducibility and Conduct of Research in the Life Sciences	2
PHSIO 590	Colloquium	2
STAT 501	Regression Methods	3
STAT 502	Analysis of Variance and Design of Experiments	3
	3-credit course in immunology	3
	3-credit course in molecular biology	3
	Other Seminars	4
<b>Electives</b>		
	The remaining 5 credits may be chosen from 500-level Physiology courses or other relevant 400- or 500-level course. For a list of suggested courses, contact the graduate program.	5
<b>Total Credits</b>		<b>35</b>

Students must earn a grade of B or better in each course and maintain an overall average of 3.00.