

**more human.**

# Human Physiology

**MASTER OF SCIENCE (MS) STUDENT MANUAL**

**AY 2023-2024**

## ***A letter from the program director***

The Human Physiology Program in the Department of Health Sciences is dedicated to being **more human**. To us, this means we value each student, their unique perspectives, and their unique interests. As such, we try to provide a **more human** graduate experience by offering more inclusive and human-based coursework, advising students with full-time faculty, promoting networking and life skills, and intentionally preparing students for the next phase of their life.

The Human Physiology program has a stellar record for preparing students for successful admission to professional health care programs (MD, DO, DMD, PT, OT, etc.), but that is only part of the story. Our curriculum leads to successful careers in the booming life sciences industry, or even a distinguished career in academia. The Human Physiology major provides an alternative to the traditional biology degree, with a focus on studying systems/humans more than cells and reactions. Our curriculum expands upon the premedical requirements with the addition of classes such as gross human anatomy, exercise physiology, muscle physiology, neuroanatomy and neurophysiology, pulmonary pathophysiology, and cardiovascular pathophysiology. We also leverage our vast network of affiliated research laboratories to lend students a chance to get involved in scientific discovery, while also boosting their appeal to graduate/medical schools.

We want students and faculty that believe in the development of a holistic graduate student to be a part of our program. We have laid out a pathway that we believe will lead to success for students in the future, and we strive to maintain an environment that allows students to be engaged and enjoy their journey along this path. We believe our students will leave the Human Physiology program more prepared, more knowledgeable, and above all, **more human**.

Let's enjoy the journey together,

*Dustin Allen, PhD*

Director of the Human Physiology Program



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# I. What is needed to graduate?

## Degree Requirements

In order to graduate with a MS in Human Physiology, the following requirements must be met:

- A total of **33 course credits** at the graduate level (500+) must be completed.
  - Up to 8 hours of course work may be transferred from other institutions
- **16 course credits** must come from the Human Physiology program
- An overall **GPA of 3.0** must be maintained to graduate.
  - **No grade less than C is acceptable for inclusion in the 33-semester-hour requirement**
  - Students receiving 3 grades (or a total of 12 credits) **below C+ will be terminated** from the degree program.
  - No required course may be repeated more than once
    - An unacceptable grade received when a course is repeated will result in termination from the degree program
- An incomplete grade, “I”, must be completed **no later than one calendar year** of the date on which the incomplete grade is reported.
  - An **F** will be assigned automatically and permanently if the coursework remains incomplete on the assigned date or twelve months after the **I** grade has been awarded, whichever comes first.
- All master's degree candidates must maintain **continuous registration** for academic credits (minimum: 0.5 credit hrs) during the Fall and Spring semesters of each year.
  - Failure to register will result in administrative withdrawal of the candidate and necessitate reapplication to continue the program.
- Degree candidates must be registered for academic credit or pay the continuing student fee during the final semester in which the thesis defense is conducted, unless the thesis is being completed in the summer.
- An application for graduation must be completed by **February 1<sup>st</sup>**, prior to graduation and can be obtained from the [SAR Academic Services Center](#) (ASC).
  - Doctoral students must check with their advisor regarding their eligibility to participate
    - It is recommended that the dissertation defense be scheduled by **mid-April** for May graduation

## Curriculum Requirements

The Human Physiology curriculum is posted in more detail online, and can be found at [this link](#).

## Preclinical Accelerated Program

The preclinical accelerated track is **33 credits**, with a final paper “Critical Literature Review (SAR HS 793)” as the capstone of the program. Out of these 33 credits, **16 credits** must be taken in the Human Physiology program. This program is meant to be completed in 2 semesters.

		1 <sup>st</sup> Semester	2 <sup>nd</sup> Semester	
<b>1<sup>st</sup> Year</b>	<b>SPH BS 704</b>	<b>Introduction to Biostatistics</b>	HP Elective	<i>see list below</i>
	<b>SAR HS 750</b>	<b>The Physiologist’s Toolbox</b>	HP Elective	<i>see list below</i>
	HP Elective	<i>see list below</i>	General Elective	<i>HP, BI, SPH, GMS, etc.</i>
	HP Elective	<i>see list below</i>	SAR HS 793	Critical Literature Review
	General Elective	<i>HP, BI, SPH, GMS, etc.</i>		

*\* Required Course, parenthesis indicates # of credit hours*

### Human Physiology Electives:

- SAR HS 541 Physiology Across the Lifespan (4, F)
- SAR HS 542 Exercise Physiology (4, B)
- SAR HS 592 Muscle Physiology (4, S)
- SAR HS 550 Neural Systems (4, S)
- SAR HS 572 Pulmonary Pathophysiology (4, S)
- SAR HS 575 Cardiovascular Pathophysiology (4, F)
- SAR HS 581 Gross Human Anatomy (4, B)
- SAR HS 582 Neuroanatomy/Neurophysiology (4, S)
- SAR HS 710 Graduate Field Experience (V, B)
- SAR HS 745 Advanced Regional Anatomy (V, B)
- SAR HS 755 Readings in Neuroscience (4, S)
- SAR HS 776 Nutritional Epidemiology (4, F)
- SAR HS 791 Directed Study/Research (V, B)
- SAR HS 793 Critical Literature Review (4, S)

### General Electives (*not a complete list*)

- SAR HP 565 Biomechanics
- SAR HP 771 Foundations of Motor Control
- SAR HP 782 Advanced Human Movement
- SAR PT 520 Functional Anatomy
- CAS BB 522 Molecular Biology Laboratory
- CAS BI 525 Biology of Neurodegenerative Diseases
- CAS BI 560 Systems Biology
- CAS CN 500 Computational Methods in Cognitive and Neural Systems
- GRS BI 755 Cellular and Systems Neuroscience
- GRS BI 655 Developmental Neurobiology
- GRS BI 756 Systems & Behavioral Neuroscience
- GRS CH 621 Biochemistry I
- GRS CH 622 Biochemistry II
- GMS AN 702 Neurobiology of Learning & Memory
- GMS AN 707 Neurobiology of Aging
- GMS AN 709 Neural Development and Plasticity
- GMS AN 716 Developmental Cognitive Neuroscience
- GMS AN 718 Methods in Neuroscience
- GMS AN 777 Fund. of Cellular & Molecular Neuroscience
- GMS AN 808 Neuroanatomical Basis of Neurological Disorders
- GMS AN 811 Cognitive Neuroscience

## Critical Literature Review Guidelines

In order to receive an A in SAR HS 793, there are 2 assignments that must be completed in accordance with the rubrics below.

### Annotated Bibliography Rubric

	<b>Not Acceptable</b> <b>1</b>	<b>Emerging</b> <b>4</b>	<b>Developing</b> <b>7</b>	<b>Proficient</b> <b>10</b>
<b>Topical relationship of sources to paper</b>	Most sources are not adequately related to topic.	Many sources are only marginally related to topic.	Most sources are clearly related to topic.	All sources are clearly related to topic.
<b>Quality and authority of sources selected</b>	Most sources are of poor, unreliable, or indeterminate quality and authority.	Many sources are of marginal quality and authority.	Most sources appear reliable and of good quality and authority.	Sources appear reliable, authoritative and of good or high quality.
<b>Quality &amp; clarity of the summary of ideas in sources</b>	Summaries appear to be possibly plagiarized or main ideas are unclear or misrepresented.	Main ideas are not summarized clearly; or, summaries are simply incomplete or sketchy.	Main ideas of sources are clearly summarized.	Main ideas of sources, including nuances and subtleties, are clearly summarized.
<b>Representation &amp; discussion of relevance of sources to paper or project</b>	No attempt is made to relate ideas in sources to paper topic.	Attempt to relate ideas in sources to paper or project topic results in inaccurate representations.	Attempt is to relate ideas in sources to paper topic or project sometimes fuzzy or unclear.	Relationship of ideas in sources to paper topic or project clearly described.
<b>Quantity of sources cited</b>	Fails to include the required number of sources.	Fails to include an adequate number of sources	Includes the required or minimal number of sources.	Includes the required or an appropriate number of sources.
<b>Accuracy of the citations</b>	Citations incomplete, errors are major and numerous.	Citations are incomplete, errors numerous.	Citations are mostly complete and errors minor.	Citations are complete and errors minor.

**TOTAL:** \_\_\_\_\_ / 60 = \_\_\_\_\_ %

For an example of this type of writing assignment, follow this link:

[https://owl.purdue.edu/owl/general\\_writing/common\\_writing\\_assignments/annotated\\_bibliographies/annotated\\_bibliography\\_samples.html](https://owl.purdue.edu/owl/general_writing/common_writing_assignments/annotated_bibliographies/annotated_bibliography_samples.html)

## Final Paper Rubric

	<b>10</b> <b>Exemplary</b>	<b>6</b> <b>Satisfactory</b>	<b>2</b> <b>Unacceptable</b>
<b>Introduction &amp; Rationale</b>	Provides a clear background, rationale, purpose of the paper. Written to an audience of non-specialists	Provides background research into the topic and describes the purpose, but lacks details in rationale/justification.	Provides background research into the topic but does not describe the purpose; Section lacks direction. Tone fails to explain details to non-specialists.
<b>Body</b>	Presents easy-to-follow topics that are logical and adequately detailed; There is plenty of scientific support for the positions described	Presents interesting topics but lacks in details or scientific support	Misses natural progression; no scientific evidence supporting any position.
<b>Discussion &amp; Conclusions</b>	Presents a logical explanation for position; addresses recommendations and/or implications for further research or use/application	Presents a logical explanation for position	Does not adequately explain position
<b>References</b>	At least 20 original research articles are cited in the text. Reference list is included and formatted appropriately	Citations are cited, but sometimes from incorrect sources. Reference list has some formatting issues, but is included	No citations were utilized, no reference list is included.
<b>Mechanics &amp; Documentation</b>	Is free or almost free of errors of grammar, spelling, and writing mechanics; appropriately documents sources	Has errors but they don't represent a major distraction; documents sources	Has many errors that obscure meaning of content or add confusion; neglects important sources or documents few to no sources

TOTAL: \_\_\_\_\_ / 50 = \_\_\_\_\_ %

For an example of an original research paper, follow this link:

[https://www.researchgate.net/publication/332447135\\_How\\_to\\_write\\_an\\_Original\\_Article](https://www.researchgate.net/publication/332447135_How_to_write_an_Original_Article)

For an example of a review article, follow this link:

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3715443/>

## Research Track

The research track is **33 credits**, with a thesis defense as the capstone of the program. Out of these 33 credits, **16 credits** must be taken in the Human Physiology program. This program is meant to be completed in 2 years. Students are usually enrolled full-time (12+ credits) in the Fall and Spring semester of their first-year study, and part-time (less than 12 credits per semester) in the second year of their study dedicating their time to research. A candidate, after successfully completing a thesis project, will present it orally in a session open to the public. Following this defense, a thesis must be sent to the library prior to graduation.

The decision to pursue a thesis should be agreed upon by a faculty member who is willing to serve as the research adviser. A faculty member in the human physiology program must agree to become the student's academic adviser and serve as the first reader on the thesis. The academic adviser will assist the student in identifying a topic for thesis research either in their lab, or at an affiliated/local laboratory.

If the nature of the thesis project is such that an affiliation must be established with another laboratory or institution, arrangements between the Department of Health Sciences and the external investigator or facility must be completed prior to initiation of the research. These arrangements include agreement of the external investigator to participate in research supervision and serve as the second reader. Once the specific research mentor from a given institution and research lab is finalized between the student and the faculty member, notification should be given to the Human Physiology Program Director, so that the student's records can be updated.

- The **thesis committee** will consist of **two** members who are involved in and/or are knowledgeable about the thesis topic area.
  - At least one of the advisors must be a full-time member of the departmental faculty.
  
- **Required steps for completing a thesis:**
  - Plan project with advisor/research mentor
  - Thesis proposal meeting (with all committee members)
  - Data collection
  - Data analysis
  - Oral presentation
  - Submission of written thesis

The Mugar Library has published a guide for Dissertations and Theses (<http://library.bu.edu/theses>). These instructions should be carefully studied before initiating preparation of the thesis.



## Sample Research Track Curriculum

		1 <sup>st</sup> Semester		2 <sup>nd</sup> Semester	
<b>1<sup>st</sup> Year</b>	<b>SPH BS 704</b>	<b>Introduction to Biostatistics (3)</b>	HP Elective	<i>see list below</i>	
	<b>SAR HS 750</b>	<b>The Physiologist's Toolbox (2)</b>	HP or General Elective	<i>see list below</i>	
	HP Elective	<i>see list below</i>	<b>SAR HS 791</b>	<b>Directed Study &amp; Research (4)</b>	
	HP Elective	<i>see list below</i>			
<b>2<sup>nd</sup> Year</b>	<b>SAR HS 791</b>	<b>Directed Study &amp; Research (4)</b>	<b>SAR HS 791</b>	<b>Directed Study &amp; Research (4)</b>	
	<b>SAR HS 791</b>	<b>Directed Study &amp; Research (4)</b>			

*\* Required Course, parenthesis indicates # of credit hours*

### Human Physiology Electives:

SAR HS 534 Physiology of Sex (4, S)  
 SAR HS 541 Physiology Across the Lifespan (4, F)  
 SAR HS 542 Exercise Physiology (4, B)  
 SAR HS 592 Muscle Physiology (4, S)  
 SAR HS 550 Neural Systems (4, S)  
 SAR HS 572 Pulmonary Pathophysiology (4, S)  
 SAR HS 575 Cardiovascular Pathophysiology (4, F)  
 SAR HS 581 Gross Human Anatomy (4, B)  
 SAR HS 582 Neuroanatomy/Neurophysiology (4, S)  
 SAR HS 710 Graduate Field Experience (V, B)  
 SAR HS 745 Advanced Regional Anatomy (V, B)  
 SAR HS 755 Readings in Neuroscience (4, S)  
 SAR HS 776 Nutritional Epidemiology (4, F)  
 SAR HS 791 Directed Study/Research (V, B)  
 SAR HS 793 Critical Literature Review (4, S)

### General Electives (*not a complete list*)

SAR HP 565 Biomechanics  
 SAR HP 771 Foundations of Motor Control  
 SAR HP 782 Advanced Human Movement  
 SAR PT 520 Functional Anatomy  
 CAS BB 522 Molecular Biology Laboratory  
 CAS BI 525 Biology of Neurodegenerative Diseases  
 CAS BI 560 Systems Biology  
 CAS CN 500 Computational Methods in Cognitive and Neural Systems  
 GRS BI 755 Cellular and Systems Neuroscience  
 GRS BI 655 Developmental Neurobiology  
 GRS BI 756 Systems & Behavioral Neuroscience  
 GRS CH 621 Biochemistry I  
 GRS CH 622 Biochemistry II  
 GMS AN 702 Neurobiology of Learning & Memory  
 GMS AN 707 Neurobiology of Aging  
 GMS AN 709 Neural Development and Plasticity  
 GMS AN 716 Developmental Cognitive Neuroscience  
 GMS AN 718 Methods in Neuroscience  
 GMS AN 777 Fund. of Cellular & Molecular Neuroscience  
 GMS AN 808 Neuroanatomical Basis of Neurological Disorders  
 GMS AN 811 Cognitive Neuroscience

## Thesis Guidelines

	<b>Excellent</b>	<b>Good</b>	<b>Fair</b>
<b>Abstract</b>	<b>7.1 – 8 pts</b>	<b>6 – 7 pts</b>	<b>0 – 5.9 pts</b>
	<ul style="list-style-type: none"> <li>STATES PURPOSE OF STUDY.</li> <li>CONCISELY SUMMARIZES RESULTS, CONCLUSIONS, &amp; INTERPRETATION.</li> </ul>	<ul style="list-style-type: none"> <li>STATES PURPOSE OF STUDY.</li> <li>SUMMARY IS WEAK OR LACKING IN CONTEXT.</li> </ul>	<ul style="list-style-type: none"> <li>MISSING OR UNCLEAR PURPOSE OF STUDY.</li> <li>SUMMARY IS WEAK &amp; LACKS CONTEXT.</li> </ul>
<b>Background &amp; Significance</b>	<b>16.1 – 18 PTS</b>	<b>12 – 16 PTS</b>	<b>0 – 11.9 PTS</b>
	<ul style="list-style-type: none"> <li>ESTABLISHES RESEARCH QUESTION, CONTEXT, &amp; SIGNIFICANCE.</li> </ul>	<ul style="list-style-type: none"> <li>RESEARCH QUESTION NOT CLEARLY STATED; WEAK CONTEXT &amp; SIGNIFICANCE.</li> </ul>	<ul style="list-style-type: none"> <li>RESEARCH QUESTION, CONTEXT &amp;/OR SIGNIFICANCE MISSING.</li> </ul>
<b>Research Design &amp; Methods</b>	<b>16.1 – 18 PTS</b>	<b>12 – 16 PTS</b>	<b>0 – 11.9 PTS</b>
	<ul style="list-style-type: none"> <li>COMPREHENSIVE &amp; ACCURATE DESCRIPTION</li> <li>REASONING BEHIND METHODOLOGY &amp; ANALYSIS CLEARLY EXPLAINED.</li> </ul>	<ul style="list-style-type: none"> <li>ADEQUATE DESCRIPTION</li> <li>REASONING BEHIND METHODOLOGY &amp; ANALYSIS NOT ALWAYS CLEARLY EXPLAINED.</li> </ul>	<ul style="list-style-type: none"> <li>WEAK DESCRIPTION</li> <li>REASONING BEHIND METHODOLOGY &amp; ANALYSIS MISSING OR INADEQUATE.</li> </ul>
<b>Results &amp; Discussion</b>	<b>16.1 – 18 PTS</b>	<b>12 – 16 PTS</b>	<b>0 – 11.9 PTS</b>
	<ul style="list-style-type: none"> <li>CLEAR &amp; LOGICAL DATA PRESENTATION</li> <li>CRITICALLY ANALYZES &amp; EVALUATES FINDINGS VS LITERATURE.</li> <li>DRAWS APPROPRIATE CONCLUSIONS &amp; FUTURE DIRECTIONS</li> </ul>	<ul style="list-style-type: none"> <li>DATA PRESENTATION ADEQUATE BUT SOMEWHAT LACKING IN CLARITY.</li> <li>ANALYSIS &amp; EVALUATION OF FINDINGS LESS STRONGLY BASED IN EXISTING LITERATURE.</li> <li>CONCLUSIONS &amp; DIRECTIONS FOR FUTURE RESEARCH LESS OBVIOUS</li> </ul>	<ul style="list-style-type: none"> <li>POOR DATA PRESENTATION.</li> <li>WEAK ANALYSIS OF FINDINGS VS LITERATURE.</li> <li>INAPPROPRIATE OR MISSING CONCLUSIONS; ILLOGICAL OR MISSING IMPLICATIONS.</li> </ul>
<b>Writing</b>	<b>9.1 – 10 PTS</b>	<b>8 – 9 PTS</b>	<b>0 – 7.9 PTS</b>
	<ul style="list-style-type: none"> <li>ORGANIZATION EXCEPTIONALLY CLEAR.</li> <li>WRITING COHESIVE.</li> </ul>	<ul style="list-style-type: none"> <li>ORGANIZATION AND WRITING GOOD, THOUGH NOT EXCEPTIONAL.</li> </ul>	<ul style="list-style-type: none"> <li>POORLY ORGANIZED AND NOT WELL WRITTEN.</li> </ul>
<b>Professionalism</b>	<b>9.1 – 10 PTS</b>	<b>8 – 9 PTS</b>	<b>0 – 7.9 PTS</b>
	<ul style="list-style-type: none"> <li>TOOK INITIATIVE.</li> <li>MAINTAINED CLEAR LINES OF COMMUNICATION.</li> <li>TOOK RESPONSIBILITY FOR ACTIONS.</li> </ul>	<ul style="list-style-type: none"> <li>WRITING COHESIVE</li> <li>USUALLY TOOK INITIATIVE.</li> <li>USUALLY, MAINTAINED CLEAR LINES OF COMMUNICATION.</li> <li>TOOK RESPONSIBILITY FOR ACTIONS.</li> </ul>	<ul style="list-style-type: none"> <li>RARELY TOOK INITIATIVE.</li> <li>RARELY MAINTAINED CLEAR LINES OF COMMUNICATION.</li> <li>RARELY TOOK RESPONSIBILITY FOR ACTIONS.</li> </ul>
<b>Oral Presentation</b>	<b>16.1 – 18 PTS</b>	<b>12 – 16 PTS</b>	<b>0 – 11.9 PTS</b>
	<ul style="list-style-type: none"> <li>PREPARED, POISED AND CONFIDENT.</li> <li>ORGANIZED PRESENTATION THAT WAS EASY TO FOLLOW.</li> <li>RESPONDS PROMPTLY AND APPROPRIATELY TO QUESTIONS.</li> </ul>	<ul style="list-style-type: none"> <li>SOMEWHAT LACKING IN PREPARATION OR CONFIDENCE.</li> <li>TALK FAIRLY WELL ORGANIZED.</li> <li>DIFFICULTY RESPONDING TO SOME QUESTIONS.</li> </ul>	<ul style="list-style-type: none"> <li>CLEARLY LACKED PREPARATION &amp; CONFIDENCE/POISE.</li> <li>POORLY ORGANIZED TALK THAT CONFUSES AUDIENCE.</li> <li>CAN'T ANSWER MOST QUESTIONS.</li> </ul>
<b>Total</b>	<b>90 – 100 PTS</b>	<b>70 – 89 PTS</b>	<b>0 – 69 PTS</b>

*See: <http://library.bu.edu/theses> for thesis formatting guidelines.*

**Total score must be >70% for a passing grade.**

## Combined BS/MS in Human Physiology Program

### Application & Degree Requirements:

- a. Apply after completing 2 years of undergraduate study with minimum 3.2 GPA.
  - i. One year of general chemistry, one year of organic chemistry, and one year of general biology must be completed by the end of 2<sup>nd</sup> year.
- b. Application deadline is April 1 of 2<sup>nd</sup> year
  - i. Official transcript must be submitted by June 1
  - ii. Decision will be made ~July 1 for acceptance into program for the fall semester of the 3<sup>rd</sup> year.
- c. To remain in the program, students must maintain a 3.00 GPA both cumulatively, and in the sciences, with no graduate level course grade below B-.
- d. Students will begin master's thesis research in their senior year.
- e. Students will graduate with a BS degree at the end of their 4<sup>th</sup> year in the program.
- f. By the end of their 5<sup>th</sup> year, students will have completed a master's thesis and will graduate with an MS degree.

### **Important Note:**

Following completion of the BS component of the BS/MS program, students are considered to be "graduate status". This impacts scholarship amount, qualification for specific loans, tuition, and other forms of financial aid. Speak with Jasmine Samuels, Assistant Director of Graduate Financial Aid, for more information on this process.

## Example BS/MS Curriculum

		1 <sup>st</sup> Semester		2 <sup>nd</sup> Semester	
1 <sup>st</sup> Year	CAS BI 107	Biology I	CAS BI 108	Biology II	
	CAS CH 101	General Chemistry I	CAS CH 102	General Chemistry II	
	CAS WR 120	First-Year Writing Seminar	CAS WR 151/152/153	Writing, Research, & Inquiry	
	CAS PS 101	General Psychology	SAR HP 151	Intro to Health & Rehab. Sciences	
	SAR HP 150	First-Year Sargent Seminar	HUB Electives	<a href="#">HUB Course List</a>	
2 <sup>nd</sup> Year	CAS BI 203	Cell Biology	CAS BI 315	Systems Physiology	
	CAS CH 203	Organic Chemistry I	CAS CH 204 <b>or</b> CAS CH 214	Organic Chemistry II <b>or</b> Organic Chemistry w/ Qualitative Analysis	
	CAS MA 121	Calculus for the Life and Social Sciences I	CAS MA 122 <b>or</b> CAS MA 115	Calculus for Life Social Sciences II <b>or</b> Statistics I	
	HUB Electives	<a href="#">HUB Course List</a>	HUB Electives	<a href="#">HUB Course List</a>	
3 <sup>rd</sup> Year	CAS CH 421	Biochemistry I	CAS CH 422	Biochemistry II	
	CAS PY 105	Elementary Physics I	SAR HS 342	Exercise Physiology	
	SAR HS 251	Human Nutrition Science	CAS PY 106	Elementary Physics II	
	SAR HP 353	Organization & Delivery of Health Care in the US	CAS PS 211	Introduction to Experimental Design	
4 <sup>th</sup> Year	SAR HS 369	Gross Human Anatomy	SAR HS 371 <b>or</b> SAR HS 370	Pulmonary Pathophysiology <b>or</b> Neuroanatomy and Neurophysiology	
	SAR HS 375	Cardiovascular Pathophysiology	SAR HS 791	Directed Study and Research (MS course)	
	SAR HS 791	Directed Study and Research (MS course)	SPH BS 704	Introduction to Biostatistics (MS course)	
	HUB Elective <b>or</b> HP Elective	<a href="#">HUB Course List</a> <b>or</b> <i>HP Elective List (below)</i>	HUB Elective <b>or</b> HP Elective	<a href="#">HUB Course List</a> <b>or</b> <i>HP Elective List (below)</i>	
5 <sup>th</sup> Year	SAR HS 750	The Physiologist's Toolbox	CAS BI 553	Molecular Biology II (w/ discussion)	
	CAS BI 552	Molecular Biology I (w/ discussion)	HP Elective	<i>HP Elective List (below)</i>	
	HP Elective	<i>HP Elective List (below)</i>	HP Elective	<i>HP Elective List (below)</i>	
	SAR HS 791	Directed Study and Research (MS course)	SAR HS 791	Directed Study and Research (MS course)	

### A Sample of Elective Options

- SAR HS 331 Physiology of Sex and Human Reproduction (Spring) *undergraduate level*
- SAR HS 534 Physiology of Sex and Human Reproduction (Spring) **graduate level**
- SAR HS 341 Physiology Across the Lifespan (Fall) *undergraduate level*
- SAR HS 541 Physiology Across the Lifespan (Fall) **graduate level**
- SAR HS 362 Muscle Physiology (Spring) *undergraduate level*
- SAR HS 592 Muscle Physiology (Spring) **graduate level**
- SAR HS 370 Neuroanatomy and Neurophysiology (Spring) *undergraduate level*
- SAR HS 582 Neuroanatomy and Neurophysiology (Spring) **graduate level**
- SAR HS 371 Pulmonary Pathophysiology (Spring) *undergraduate level*
- SAR HS 572 Pulmonary Pathophysiology (Spring) **graduate level**
- SAR HS 375 Cardiovascular Pathophysiology (Fall) *undergraduate level*
- SAR HS 575 Cardiovascular Pathophysiology (Fall) **graduate level**
- SAR HS 550 Neural Systems (Spring) **graduate level**
- SAR HS 710 Graduate Field Experience: Human Physiology (Fall or Spring)
- SAR HS 745 Advanced Regional Anatomy (Fall or Spring)
- SAR HS 755 Readings in Neuroscience (Spring)
- CAS BI 520 Sensory Neurobiology (Fall)
- CAS BI 576 Carcinogenesis (Spring)
- GRS BI 645 Cellular and Molecular Neurophysiology (Fall)
- GRS BI 681 Molecular Biology of the Neuron (Spring)
- GRS BI 735 Advanced Cell Biology (Fall)
- GRS BI 755 Cellular and Systems Neuroscience (Fall)

## II. Special Circumstances

### Academic Probation

Any student whose grade point average is below a 3.0 will be placed on academic probation and will be notified by Sargent College. To remove the probationary status from the academic record, a student must achieve a 3.0 GPA in the following semester, or they will be terminated from the program.

- **Remember:** *No grade less than C is acceptable for inclusion in the 33-semester-hour requirement. Students receiving 3 grades (12 credits) below a C+ will be terminated from the program.* No course required by the for the program may be repeated more than one time. An unacceptable grade received when a course is repeated will result in termination from the degree program

A letter is sent to each student informing him/her of academic probation status. Copies of this letter are sent to the faculty advisor/s. Students on probation are encouraged to seek advice from an academic counselor at the college.

### Dismissal

Boston University, through its various faculties and appropriate committees, reserves the right to suspend or dismiss any student for failure to maintain a satisfactory academic record, acceptable personal behavior, or satisfactory standards of health. Copies of Boston University's Code of Student Responsibilities are available from the Office of the Dean of Students, East Tower, George Sherman Union, 775 Commonwealth Avenue, Boston, MA 02215.

Students absent from classes more than two days for illness should be under a doctor's care. Students who are absent five days or more for illness should present to Student Health Services a certificate of fitness from their physician or be examined at the University Clinic.

### Leave of Absence

A leave of absence may be requested by petition for specified lengths of time provided an explanation is presented. Such a petition should be formulated with the guidance of the ASC Office and subsequently addressed and presented to the Program Director. Candidates must complete their program within five years from the first semester of matriculation and must submit an Application for Graduation at least three months prior to the expected date of graduation. These can be obtained from the Academic Services Center (Room 207).

### Termination of Enrollment and Appeal Process

No grade less than C is acceptable for inclusion in the 33-semester-hour requirement. Students receiving 3 grades (12 credits) below a C+ *will be* terminated from the program. No course required by the for the program may be repeated more than one time. An unacceptable grade received when a course is repeated will result in termination from the degree program

Students may appeal this decision and file a formal petition can be submitted to the College Academic Policies and Procedures Committee by contacting the Academic Services Center (SAR Room 207).

### III. Standards & Procedures

Sargent College has a commitment to excellence in the education of Health and Rehabilitation Professionals. Individually and collectively, those associated with Sargent are responsible for maintaining and promoting those ethical standards below:

#### **Academic Honesty**

Sargent College of Health and Rehabilitation Sciences is committed to creating an intellectual community in which both faculty and students participate in the free and uncompromising pursuit of learning. This is possible only in an atmosphere of mutual trust where the discovery and communication of truth are marked by scrupulous, unqualified honesty. The college expects all students to adhere strictly to the accepted norms of intellectual honesty in their academic and clinical work. It is the responsibility of the student to abide by the Sargent College Academic Conduct Code that is distributed annually to each student at the college.

<https://www.bu.edu/academics/policies/academic-conduct-code/>

#### **Attendance**

Students are expected to attend each class session unless they have a valid reason for being absent. Students may be required at any time to account for undue irregularity in attendance, either by personal explanation to their faculty advisor or dean or by written statement from a parent or another authority. Any student who has been excessively absent from a course may be required to withdraw from that course without credit. Students who expect to be absent from class for more than five days should notify their dean promptly.

#### **Absence for Religious Reasons**

Religious Holidays: According to Chapter 151C of the General Laws, Commonwealth of Massachusetts, any student in an educational or vocational training institution, other than a religious or denominational educational or vocational training institution, who is unable, because of his or her religious beliefs, to attend classes or to participate in any examination, study, or work requirements on a particular day, shall be excused from any such examination or study or work requirement, and shall be provided with an opportunity to make up such examination, study, or work requirement that may have been missed because of such absence on any particular day; provided, however, that such makeup examination or work shall not create an unreasonable burden upon such school.

- Please identify potential schedule conflicts with religious observances *early in the semester* and communicate these to the course instructor. To avoid misunderstandings, the agreed-upon arrangement should be put in writing/email. If the instructor and student cannot agree on an accommodation, the advice of the college Dean's office should be sought.



## **Disability Accommodations**

Boston University provides reasonable accommodations to eligible individuals with disabilities in conformance with Section 504 of the Rehabilitation Act of 1973 and with the Americans with Disabilities Act of 1990. Requests for disability accommodations must be made in a timely fashion to the Office of Disability Services, 19 Deerfield Street, Boston, MA 02215; 617-353-3658 (Voice/TTY). Students seeking accommodations must submit appropriate medical documentation and comply with the policies and procedures of the Office of Disability Services. Please see also, <https://www.bu.edu/disability/accommodations/>

## **Filing a Complaint for an Issue Regarding Academic Internships**

**Process for Filing a Complaint for an Issue Regarding Distance Education (including field placements, clinical rotations, and academic internships):**

Boston University makes every attempt to resolve student complaints within its academic and administrative departments. Students should first attempt to resolve any concerns by utilizing existing University procedures.

The [BU Compliance website](#) and the [Academic Bulletin](#) provide information about ways that students and prospective students can report concerns and utilize University complaint procedures. The Massachusetts Department of Higher Education, in its capacity as the State Authorization Reciprocity Agreement (SARA) portal entity for Massachusetts, reviews and evaluates student complaints regarding distance education activities offered by Boston University in accordance with 610 CMR 12.07.

If an issue regarding distance education cannot be resolved internally, please see the [process here](#).

## IV. Full-Time Faculty & Staff in Human Physiology

### Faculty

**Dustin Allen, PhD**

*Senior Lecturer and Program Director,*  
Pulmonary, & Exercise Physiology,

**Helen Barbas, PhD**

*Professor,*  
Neuroscience & Organization of Prefrontal Cortex

**Jesse Moreira, PhD**

*Clinical Assistant Professor,*  
Cardiovascular Physiology & Education

**Kathleen G. Morgan, PhD**

*Professor,*  
Cardiovascular Cell Biology & Cytoskeleton

**Kelley Pesanelli, PT, MSPT**

*Senior Lecturer,*  
Physical Therapy, Healthcare

**Lisa Roberts, PhD**

*Lecturer,*  
Physiology, Aging, Education

**Vasileios Zikopoulos, PhD**

*Associate Professor,*  
Neuroscience, Organization of Prefrontal Cortex in Autism

### Staff

**Danuta (Danka) Charland, PhD, MCJ, CAGS**

Assistant to the Program Director

[charland@bu.edu](mailto:charland@bu.edu)

Office: SAR - Rm 443D





## **Research Faculty Affiliated with Human Physiology**

[Christina M. Dieli-Conwright, PhD, MPH, CACSM, CSCS](#)

[Jingyan Han, PhD, \(BUMED\)](#)

[Claus Hilgetag, PhD](#)

[Deepak Kumar, PT, PhD \(BU, SAR\)](#)

[Cara Lewis, PT, PhD \(BU, SAR\)](#)

[Brandon Roberts, PhD \(USARIEM\)](#)

[LaDora Thompson, PhD \(BU, SAR\)](#)

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