

GRADUATE EDUCATION

INTEGRATIVE PHYSIOLOGY PROGRAM

UNIVERSITY OF NORTH TEXAS HEALTH SCIENCE CENTER
AT FORT WORTH

POLICIES AND GUIDELINES

Revised July 2017

GRADUATE PROGRAMS IN THE DEPARTMENT OF INTEGRATIVE PHYSIOLOGY

I. GENERAL DESCRIPTION:

A student interested in graduate work in physiology may pursue either the M.S. or Ph.D. degree in Biomedical Sciences (Integrative Physiology) within the Graduate School of Biomedical Sciences of the University of North Texas Health Science Center at Fort Worth (UNTHSC.) In addition, dual degree programs of DO/MS or DO/PhD can be achieved. For a complete general description of the program and degree requirements of these departments, the prospective student should consult the graduate catalog of UNTHSC. The requirements outlined in the present document fulfill the requirements delineated in the graduate catalog and are intended to provide the student with the specific programs available in the Department of Integrative Physiology.

II. ENTRANCE REQUIREMENTS:

Requirements for admission into departmental M.S. and Ph.D. degree programs are as stated in the current catalog for admission to the Graduate School of Biomedical Sciences at UNTHSC.

III. DEGREE REQUIREMENTS:

A. Credit Hours (Graduate Level Courses) Required for Degree Programs

1. An M.S. in Biomedical Sciences requires a minimum of 30 credit hours. Departmental requirements extend this to 31 credit hours. There are three concepts of the M.S. degree education. These are:
 - a. students who wish to obtain only an M.S.;
 - b. a Ph.D. student who fails to achieve a Ph.D. and is awarded a terminal M.S. degree;
 - c. those who explore the M.S. degree as a means of going on further to a Ph.D.
2. A Ph.D. in Biomedical Sciences requires a minimum of 90 credit hours. Typical departmental degree plans require 96 credit hours.
3. Core Curriculum Requirements for All Students
M.S. and Ph.D. students must complete the BMSC core requirements as described in the graduate school catalog. For those students entering the Ph.D. degree program with an M.S. degree, the core program will be determined by the student's Ph.D. degree committee and the Dean of the Graduate School. In some instances, students may be required to take additional courses or request to waive a core requirement depending on their backgrounds. This will be determined by the student's committee and approved by the Graduate Dean.
4. M.S. and Ph.D. Degree Plans

M.S. Degree Plan for Integrative Physiology

Year 1: Fall

BMSC 6200 Experimental Design and BioStats	2 SCH
BMSC 6201 Fundamentals of BMSC 1	2 SCH
BMSC 6202 Fundamentals of BMSC 2	2 SCH
BMSC 6203 Fundamentals of BMSC 3	2 SCH
BMSC 6204 Fundamentals of BMSC 4	2 SCH
BMSC 5150 Lab Rotations	1 SCH
BMSC 5150 Lab Rotations	<u>1 SCH</u>
Total	12 SCH

Milestones by semester end: Major Professor, Change of Discipline

Year 1: Spring

BMSC 5160 Biomedical Ethics	1 SCH
BMSC 5315 Principles in Scientific Communication	2 SCH
CVMD 5140 Seminar in Current Topics	1 SCH
BMSC 5998 Individual Research for MS students	1-4 SCH
CVMD Advanced Course/Electives	<u>0-6 SCH</u>
Total	12 SCH

Milestones by semester end: Advisory Committee, Degree Plan

Year 1: Summer

BMSC 6100 Scientific Communication Competencies	1 SCH
BMSC 5998 Individual Research for MS students	1-5 SCH
CVMD Advanced Courses/Electives	<u>0-4 SCH</u>
TOTAL	6 SCH

Milestones by semester end:

Research Summary (annual committee meeting),

Research Proposal (advancement to candidacy)

Year 2

BMSC 5395 Thesis	1-9 SCH
CVMD Advanced Courses/Electives	<u>0-8 SCH</u>
Total	9 SCH

TOTAL **36 SCH**

Note: 30 SCH are accumulated at this point and, depending on the number of Individual Research hours vs. advanced course credits taken, graduation is mathematically possible (a maximum of XX SCH is counted toward the 30 SCH required for the degree). If degree requirements are not met, student continues to register for 9 SCH of Thesis (BMSC 5395) in each Fall and Spring semester or 6 SCH in each summer semester until requirements have been completed.

Ph.D. Degree Plan for Integrative Physiology

Year 1: Fall

BMSC 6200 Experimental Design and BioStats	2 SCH
BMSC 6201 Fundamentals of BMSC 1	2 SCH
BMSC 6202 Fundamentals of BMSC 2	2 SCH
BMSC 6203 Fundamentals of BMSC 3	2 SCH
BMSC 6204 Fundamentals of BMSC 4	2 SCH
BMSC 5150 Lab Rotations	1 SCH
BMSC 5150 Lab Rotations	<u>1 SCH</u>
Total	12 SCH

Milestones by semester end: Major Professor, Change of Discipline

Year 1: Spring

BMSC 5160 Biomedical Ethics	1 SCH
BMSC 5315 Principles in Scientific Communication	2 SCH
CVMD 5140 Seminar in Current Topics	1 SCH
BMSC 6998 Individual Research	3 SCH
CVMD 6500 Integrative Physiology	<u>5 SCH</u>
Total	12 SCH

Milestones by semester end: Advisory Committee, Degree Plan

Year 1: Summer

BMSC 6100 Scientific Communication Competencies	1 SCH
BMSC 6998 Individual Research	1-5 SCH
CVMD Advanced Courses/Electives*	<u>0-5 SCH</u>
Total	6 SCH

Milestones by semester end:
Research Summary (annual committee meeting),
Qualifying Exam (advancement to candidacy)

Year 2: Fall

CVMD 6385 Current Topics in Physiology: Works in Progress	1 SCH
CVMD 5140 Seminar in Current Topics	1 SCH
CVMD Advanced Courses/Electives	0-9 SCH
BMSC 6998 Individual Research	<u>1-10 SCH</u>
Total	12 SCH

Year 2: Spring

CVMD Advanced Courses/Electives	0-11 SCH
BMSC 6998 Individual Research	<u>1-12 SCH</u>
Total	12 SCH

Year 2: Summer

BMSC 6100 Scientific Communication Competencies	1 SCH
BMSC 6998 Individual Research	1-5 SCH
CVMD Advanced Courses/Electives	<u>0-5 SCH</u>
Total	6 SCH

Milestones by semester end: Research Progress Summary (annual committee meeting), approved Research Proposal (and, subsequently, advancement to candidacy)

Year 3: Fall

CVMD Advanced Courses/Electives	0-8 SCH
BMSC 6395 Doctoral Dissertation	1-8 SCH
CVMD 6385 Current Topics in Physiology: Works in Progress	<u>1 SCH</u>
Total	9 SCH

Year 3: Spring

CVMD Advanced Courses/Electives	0-8 SCH
BMSC 6395 Doctoral Dissertation	<u>1-9 SCH</u>
Total	9 SCH

Year 3: Summer

BMSC 6395 Doctoral Dissertation	5 SCH
BMSC 6100 Scientific Communication Competencies	<u>1 SCH</u>
Total	6 SCH

Note: 90 SCH are accumulated at this point and, depending on the number of Individual Research hours vs. advanced course credits taken, graduation is mathematically possible (a maximum of 40 SCH is counted toward the 90 SCH required for the degree). If degree requirements are not met, student continues to register for 9 SCH of Doctoral Dissertation (BMSC 6395) in each Fall and Spring semester or 6 SCH in each summer semester until requirements have been completed.

*Ph.D. students are required to take at least one other CVMD advanced course in addition to CVMD 6500. The students are also free to take advanced course from other disciplines. These other advanced courses should be selected in consultation with the student's major professor and advisory committee. The CVMD advanced course requirement can be satisfied by taking any one of the following courses:

CVMD 5302	Physiology and Pathophysiology of the Renal and Respiratory Systems
CVMD 5300	Cardiovascular Physiology
CVMD 5304	Molecular Genetics of Cardiac and Vascular Disease
CVMD 6350	Physiology of Skeletal and Smooth Muscle
CVMD 6360	Cardiovascular Regulation During Exercise
CVMD 6380	Neurohumoral Control of Autonomic Function
CVMD 6390	Myocardial Metabolism: Concepts and Controversies

In some cases, a different degree plan may be applicable. In all cases the degree plan must be approved by the student's advisory committee and by the Dean of the GSBS.

For students entering the Ph.D. program with the M.S. or other advanced degree, certain of the BMSC core courses may be waived. Waiving of a core course will usually require that the student has made a grade of B or above in an equivalent course or has made a grade of 80 or above in a waiver examination. The waiving of a course does not mean the student will receive credit for those specific course hours toward the Ph.D. degree. Once it is determined which core courses are to be waived, the remaining course hours required for the Ph.D. are determined by the student's Advisory Committee.

5. D.O./M.S. Degrees At least 18 SCH, not including courses in the D.O. program will be required to obtain the M.S. degree. These SCH will normally include:

BMSC 6200	Experimental Design and Biostatistics	2 SCH
BMSC 5160	Biomedical Ethics	1 SCH
BMSC 5315	Principles of Scientific Communications	1 SCH
BMSC 5998	Individual Research for MS students	3 or more SCH
BMSC 5395	Thesis	3 or more SCH
CVMD Electives		

6. D.O./Ph.D. Degrees At least 45 SCH, not including courses in the D.O. program, are required to obtain the Ph.D. degree as a second terminal degree. These SCH will normally include:

BMSC 6200	Experimental Design and Biostatistics	2 SCH
BMSC 5160	Biomedical Ethics	1 SCH
BMSC 5315	Principles of Scientific Communications	1 SCH
BMSC 6998	Individual Research	3 or more SCH
BMSC 6395	Doctoral Dissertation	12 SCH
CVMD 6385	Current Topics in Physiology	3 SCH
	Electives	Variable

7. The Ph.D. in Integrative Physiology as a second terminal degree For students entering the program with an earned terminal degree (D.O., M.D., Ph.D., etc.), the program requirements are as listed above for the D.O./Ph.D degree.

B. Grades

To be in good standing, M.S. and Ph.D. students must maintain an overall grade point average of 3.0 or above. If the grade point average falls below 3.0, this situation must be remedied in accordance with GSBS policies. If a M.S. or Ph.D. student receives a C grade in a BMSC core course, this situation must be remediated in accordance with GSBS policies.

M.S. and Ph.D. students must earn a grade of B or A in BMSC 6204. Ph.D. students must achieve an overall grade point average of 3.0 in BMSC core courses: BMSC 6201, BMSC 6202, BMSC 6203, BMSC 6204, and BMSC 6200.

If a M.S. or Ph.D. student does not earn a grade of B or A in any core or elective course, the student's advisory committee may require the student to retake the course and earn a grade of B or A.

C. Research

The M.S. thesis and the Ph.D. dissertation will require meaningful research of publishable quality. Advancement to Ph.D. candidacy will require the student to develop, write, and defend before the student's advisory committee on an NIH-type research grant proposal. In addition, the student must successfully defend his or her knowledge of physiology in an oral defense before a departmental examination committee.

Furthermore, it will be expected that as early as possible, the Ph.D. candidate present a seminar on his or her research in progress. Furthermore, it will normally be required that the Ph.D. candidate be first-author on a minimum of two meaningful research papers (either submitted, in press, or published) prior to being awarded the terminal degree. This requirement applies to all students in a Ph.D. program, whether they enter with an M.S. or another terminal degree. A student who, in the judgment of the advisory committee, was not the primary author of the submitted papers on his or her research will be required to write a traditional dissertation.

The advisory committee may require that M.S. thesis research be submitted for publication before the degree is awarded.

D. Course Load and Time Commitment

Since research is a major part of the degree requirement for the M.S. and Ph.D. degrees, it is expected that all full time students spend at least 40 hours per week at UNTHSC. When not in class or attending departmental seminar or journal club, the student will report to the laboratory of their mentor. These time commitments are required of students receiving financial support from UNTHSC. Absences must be approved according to GSBS policies and procedures.

All M.S. and Ph.D. students are required to attend departmental seminars and journal club, whether or not they are registered for seminar credit. Absence from departmental seminars and journal club meetings must be approved by the departmental seminar director prior to the seminar or journal club meeting if at all possible.

E. Examinations

In addition to the examinations given as a part of a course, the student pursuing either the M.S. or Ph.D. degree must satisfactorily pass certain department or university required examinations as follows:

1. Before the awarding of the M.S. degree, the student must satisfactorily defend his or her thesis proposal in order to register for Thesis Research hours. The student must also present their thesis work in a public seminar and satisfactorily defend their thesis to their committee.
2. Ph.D. Degree. Following the first year, the student must perform satisfactorily on a Qualifying Examination in Integrative Physiology as outlined above. According to the GSBS policy this examination must be satisfactorily completed before the end of the second Fall semester. The exam will cover integrative physiology and research aptitude before the departmental examining committee, which will not include the mentor of the student. Students entering the program with a terminal degree (for example: D.O., M.D., D.V.M., etc.) will normally take this examination during the Fall of the first year at UNTHSC. If the degreed student does not show proficiency in Physiology, he/she will be required to make a grade of "B" or better in BMSC 6204. Credit for this course will not count toward the Ph.D. degree plan.

All Ph.D. students are required to satisfactorily develop, write, publicly present, and defend before the student's Ph.D. committee, an NIH style grant application. This grant proposal may describe the student's proposed dissertation research, and if so serve as the dissertation proposal. This should be completed before the end of the Summer semester of the second year.

F. Teaching Assistance

As part of their training, all students pursuing the M.S. or Ph.D. degree may be required to assist in the Physiology teaching mission. This policy applies whether or not the student receives financial support from the Integrative Physiology Program.

IV. DEPARTMENTAL/INSTITUTIONAL FINANCIAL SUPPORT

Qualified students pursuing either the M.S. or Ph.D. degree may receive financial support. These funds may be provided by graduate student stipends available to the department, departmental resources, research grants, or an NIH predoctoral training grant. Recipients must meet the requirements of the relevant source. The level of support, regardless of the source, is compatible with the current level of NIH predoctoral stipends and is set by the Graduate School. Furthermore, regardless of the source of support during the first year, efforts will be made following the first year of study to support the student from grant funds garnered by the student's research supervisor.

V. ADVISING

Graduate students will select a major advisor, and in consultation with the advisor, select an advisory committee before completing two semesters in the program. Prior to selecting a major advisor, graduate students will be advised by the Dean's Office.

Graduate students working off-campus on a thesis or dissertation project may have an off-site research advisor who may be appointed as an adjunct faculty member of the department and who must be appointed as an adjunct or temporary member of the Graduate School faculty. The student's thesis or dissertation defense must be presented on campus.

The advisory committee and the student will be expected to meet at least once each academic year to review the student's progress and direction.