

# COMPARATIVE BIOMEDICAL SCIENCES, PH.D.

## REQUIREMENTS

### MINIMUM GRADUATE SCHOOL REQUIREMENTS

Review the Graduate School minimum academic progress and degree requirements (<http://guide.wisc.edu/graduate/#policiesandrequirements>), in addition to the program requirements listed below.

### MAJOR REQUIREMENTS

#### MODE OF INSTRUCTION

Face to Face	Evening/Weekend	Online	Hybrid	Accelerated
Yes	No	No	No	No

#### Mode of Instruction Definitions

**Accelerated:** Accelerated programs are offered at a fast pace that condenses the time to completion. Students are able to complete a program with minimal disruptions to careers and other commitments.

**Evening/Weekend:** Courses meet on the UW–Madison campus only in evenings and/or on weekends to accommodate typical business schedules. Students have the advantages of face-to-face courses with the flexibility to keep work and other life commitments.

**Face-to-Face:** Courses typically meet during weekdays on the UW-Madison Campus.

**Hybrid:** These programs combine face-to-face and online learning formats. Contact the program for more specific information.

**Online:** These programs are offered 100% online. Some programs may require an on-campus orientation or residency experience, but the courses will be facilitated in an online format.

### CURRICULAR REQUIREMENTS

#### Requirements Detail

Minimum Credit Requirement 51 credits

Minimum Residence Credit Requirement 32 credits

Minimum Graduate Coursework Requirement Half of degree coursework (26 credits out of 51 total credits) must be completed graduate-level coursework; courses with the Graduate Level Coursework attribute are identified and searchable in the university's Course Guide.

Overall Graduate GPA Requirement 3.00 GPA required.

Other Grade Requirements Students must earn a B or above in all major coursework.

**Assessments and Examinations** After the committee is chosen, the student must submit certification paperwork that details the intended coursework plan, the committee members' names and signatures, a short explanation of why they were chosen and an appended research plan. Certification plans will be reviewed and approved by the program academic committee.

Students are expected to meet with their committee at least once per year until degree completion.

There are two preliminary examinations. The first (A) consists of a take-home exam of questions authored by the student's dissertation committee, followed by an oral exam. The student may retake the exam once if they fail on the first attempt.

The second preliminary examination (B) requires that the student write their research plan in the form of a major grant application and defend it orally before the committee.

Candidates must present broad-based evidence of general proficiency in research and the ability to conduct independent investigation as demonstrated in a written dissertation presenting original research. A final public presentation, followed by an oral exam in front of their committee and official deposit of the dissertation with the Graduate School is required.

**Language Requirements** No language requirements.

**Doctoral Minor/Breadth Requirements** A minor is no longer required but may be completed by students who wish to receive one. The decision to fulfill a minor should be requested at the time of certification. In general, most minors require a minimum of 10 didactic credits in a single degree program (e.g., neuroscience, population health, genetics). Focused minors usually require approval from the related program or department and may involve additional rules or credits. Check with the program in which you have an interest early in the process.

### REQUIRED COURSES

Choose your coursework in consultation with your major professor. The Graduate School requires a minimum of **32** total credits prior to taking the CBMS prelim B and **51** credits to graduate (any combination of didactic or lab courses, seminars and research).

- 20 didactic credits. Nine credits of advanced coursework, or MS/DVM coursework or equivalent, may be transferred as approved by your thesis committee and the Academic Committee, provided they are defined as graduate level. Nine credits may be transferred from coursework taken as a Special Student at UW-Madison if the student pays the difference in tuition for the terms in question and the course is numbered 700 and above. A maximum of 7 undergraduate credits may be transferred only from UW-Madison. In all cases, these credits will not count toward the 50% minimum unless courses are graduate level (700 level and above).
- 2 PATH-BIO 930 Advanced Seminar one-credit student seminar courses.
- For students who enter fall 2016 or later: PhD students must register for four semesters of PATH-BIO 930 Advanced Seminar and

present twice after the first two semesters. One presentation must be completed prior to passing to dissertator status. The second presentation may take place after reaching dissertator status, but no later than the semester prior to the student's dissertation defense. PhD students will take the course P/S/U (Progress/Satisfactory/Unsatisfactory) unless they are presenting.

- 28 Research 990 credits (minimum, unless you take more didactic or laboratory courses)
- Certification submitted and approved by thesis committee and Academic Committee
- Pass preliminary examinations A and B
- Completed dissertation composed of original work approved by your major professor and committee based on original research, defended before your committee and deposited with the Graduate School.

### Approved and Recommended Courses

The following is a list of core courses taken by many students and recommended courses that are appropriate to specific research areas. These courses are suggestions only; the student and their committee ultimately decide the best coursework plan for each student's specific program, with final approval from the program's academic committee. Students are responsible for determining that the coursework chosen meets the Graduate School's criteria for graduate work.

Code	Title	Credits
<b>Recommended Course</b>		
SURG SCI 812	Research Ethics and Career Development	2
Any other science-based ethics course		
<b>Core Courses</b>		
These courses are chosen by many students to fulfill their major coursework plan		
GENETICS 466	Principles of Genetics	3
PATH-BIO/HORT 500	Molecular Biology Techniques	3
PATH-BIO 773		3
BIOCHEM 501	Introduction to Biochemistry	3
BIOCHEM/GENETICS/MICROBIO 612	Prokaryotic Molecular Biology	3
BIOCHEM/GENETICS/MD GENET 620	Eukaryotic Molecular Biology	3
BIOCHEM/PHMCOM/ZOOLOGY 630	Cellular Signal Transduction Mechanisms	3
ZOOLOGY 570	Cell Biology	3
PATH 750	Cellular and Molecular Biology/Pathology	2-3
PATH 751	Cell and Molecular Biology of Aging	3
STAT/F&W ECOL/HORT 571	Statistical Methods for Bioscience I and Statistical Methods for Bioscience II	8
& STAT/F&W ECOL/HORT 572		
<b>Courses from which Students Build Disciplinary Strength</b>		
<i>Epidemiology</i>		
PATH-BIO 512	Introduction to Veterinary Epidemiology	2
POP HLTH/SOC 797	Introduction to Epidemiology	3

POP HLTH 802	Advanced Epidemiology: Etiology and Prevention	3
<i>Physiology</i>		
AN SCI/DY SCI 434	Reproductive Physiology	3
COMP BIO 551	Veterinary Physiology A	4
COMP BIO 506	Veterinary Physiology B (spring)	4
ZOOLOGY 611	Comparative and Evolutionary Physiology	3
ZOOLOGY/AN SCI/OBS&GYN 954	Seminar in Endocrinology-Reproductive Physiology	1
<i>Infectious Disease and Immunology</i>		
PATH-BIO 510	Veterinary Immunology	3
PATH-BIO 513	Veterinary Virology	2
PATH-BIO 514	Veterinary Parasitology	3
PATH-BIO 517	Veterinary Bacteriology and Mycology	4
PATH-BIO/M M & I 528	Immunology	3
PATH-BIO/M M & I 750	Host-Parasite Relationships in Vertebrate Viral Disease	3
PATH-BIO 773		3
M M & I/PATH-BIO 720	Advanced Immunology: Critical Thinking	3
M M & I/PATH-BIO 790	Immunology of Infectious Disease	3
<i>Neuroscience</i>		
COMP BIO 505	Veterinary Neuroanatomy and Neurophysiology	3
ZOOLOGY/PSYCH 523	Neurobiology	3
NTP/NEURODPT 610	Cellular and Molecular Neuroscience	4
NTP/NEURODPT/PSYCH 611	Systems Neuroscience	4
<i>Toxicology and Pharmacology</i>		
COMP BIO 555	Veterinary Toxicology	2
<i>Oncology</i>		
ONCOLOGY 675	Advanced or Special Topics in Cancer Research	1-3
ONCOLOGY 703	Carcinogenesis and Tumor Cell Biology	3
<i>Virology</i>		
PATH-BIO 513	Veterinary Virology	2
BIOCHEM/M M & I 575	Biology of Viruses	2
ONCOLOGY/PL PATH 640	General Virology-Multiplication of Viruses	3
M M & I/PATH-BIO 750	Host-Parasite Relationships in Vertebrate Viral Disease	3