**Cell and molecular biology**

**Doctor of Philosophy (Ph.D.) Degree**

**DEGREE INFORMATION**

**Priority Admission Application Deadlines:**

**Domestic**

Fall: January 1

Spring: August 1

Summer: No Admission

International applicant deadlines:

<http://www.grad.usf.edu/majors>

**Minimum Total Hours:** 90

**Level:** Doctoral

**CIP Code:** 26.0406

**Dept Code:** BCM

**Major/College Codes:** CBO AS

**Implemented:** 2014

**CONTACT INFORMATION**

**College:** Arts and Sciences

**Department:** Cell Biology, Molecular Biology and Microbiology (CMMB)

**Contact Information:** [www.grad.usf.edu](http://www.grad.usf.edu)

 **MAJOR INFORMATION**

**Major Research Areas:** Cell Biology, Molecular Biology, Cancer Biology, Signal Transduction and Gene Regulation, Developmental Biology, Applied and General Microbiology

**ADMISSION INFORMATION**

Must meet University requirements (see Graduate Admissions), as well as requirements for admission to the major, listed below. Must meet University requirements (see Graduate Admissions), as well as requirements for admission to the major, listed below.

* 3.00 GPA last 60 hours of B.S. degree.
* GRE: 57th percentile Verbal, 35th percentile Quantitative, 73rd percentile AW
* All international students are required to submit the TOEFL test. Non-native English speaking graduate students must score a minimum of at least 570 on the paper based or a minimum total score of 79 on the internet-based test TOEFL and at least 50 on the TSE to be eligible for a teaching assistantship.
* It is expected that candidates for the Ph.D. degree will have completed courses equivalent to those required for the B.S. in Biology at U.S.F.
* Interview
* Personal Statement of goals, experience
* Three letters of recommendation

**CURRICULUM REQUIREMENTS**

Total Minimum Program Hours 90

Core – 6 hours

Other courses – 5 hours

Electives – 3 hours

Dir Research – 43 hours

Dissertation – 32 hours

Seminar – 1 hour

 **Core Requirements 6 Hours**

PCB 6525 Molecular Genetics 3

PCB 6956 Scientific Grant Writing 3

 **Other Required Courses 5 Hours**

 PCB 6920 Advances in Cellular and Molecular Biology 1

 BSC 6930 Lectures in Contemporary Biology (1) taken four times 4

 **Electives\* 3 hours minimum**

Selected from:

PCB 5616 Molecular Phylogenetics 3

PCB 6107 Advanced Cell Biology 4

BSC 5425 Genetic Engineering and Recombinant DNA Technology 3

MCB 5206 Public Health & Pathogenic Microbiology 3

PCB 6236 Advanced Immunology 4

PCB 5256 Developmental Mechanisms 3

BSC 6932 Selected Topics 1-4

\**Classes not on this list may be used with the approval of the CMMB Graduate Director*

**Research Requirements 76 hours minimum**

 BSC 7910 Directed Research 43 hours minimum

 BSC 7980 Dissertation Research 32 hours minimum

 BSC 7936 Ph.D. Seminar 1 hour

**Qualifying Exams**

All students in the Cell and Molecular Biology Ph.D. program must complete a written and oral qualifying examination.

The written exam shall be in the format of a grant proposal and contain the following sections:

* Abstract {300 words}
* Specific Aims [1 page]
* Background and Significance of topics [4-5 pages]
* Proposed research program (conducted over 3-year period) [9-10 pages]
* Bibliography (no page limit)

The length of the proposal shall be no more than 15 pages (the abstract and bibliography does not count in the page limit). The topic of the exam shall meet the following guidelines:

* The written proposal *cannot be based in the same* **model organism** that the student will use to carry out their dissertation research
* The written proposal *cannot be based on the analysis of* **the same gene/protein** that the student will investigate during their dissertation research
* The written proposal *cannot be based on the analysis of* **the same pathway** that the student will investigate during their dissertation research

The oral exam is centered around a formal dissertation proposal presentation, followed by a period of questioning by the dissertation advisory committee.

 **Admission to Candidacy**

The doctoral student is eligible for admission to candidacy after completing structured course requirements, passing the qualifying examinations and approval by the supervisory committee. Appropriate forms to document promotion to candidacy must be completed and to the Office of Graduate Studies. Following admission to candidacy, a student must enroll in BSC 7980 when engaged in research, data collection, or writing activities relevant to the doctoral dissertation. Advisors should assign the number of credits in this course in accordance with policy and appropriate to the demands made on faculty, staff, and University facilities, but in no event will the total number of earned dissertation credits be fewer than 32. Students not admitted to candidacy are not eligible to enroll in BSC 7980.

 **Dissertation Requirements 38 hours minimum**

 BSC 7980 Dissertation Research

 The dissertation of all graduate students admitted to a graduate degree program at the University of South Florida must conform to the guidelines of the Handbook for Graduate Thesis and Dissertations available from the

 USF Office of Graduate Studies (<http://www.grad.usf.edu/thesis.asp>).

 **Doctoral Seminar and Defense**

All doctoral students must present a public seminar to the CMMB Department and must be enrolled in BSC 7980, during the semester in which the seminar is given. The seminar should be a concise summary of the research completed to satisfy the requirements for the Ph.D. The seminar is open to the general public and must be announced two weeks prior to the presentation. Upon completion of the seminar, the general public will be invited to ask questions. At the discretion of the student’s advisory committee, members of the committee may continue to question the graduate student after the general public has departed the seminar room. Each student is expected to defend his/her research to the unanimous satisfaction of the advisory committee. Following the defense, students will make any editorial modifications to the dissertation as recommended by the advisory committee and submit the dissertation to the Office of Graduate Studies.

**Other Requirements**

 1 Scientific Publication

 2 presentations at Scientific Meetings

**Course Sequence**

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| --- | --- | --- |
| Fall year 1 | BSC7910 Directed Research (4) | Research Req. |
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|  | PCB6920 Advances in Cellular & Molecular Biology (1) | Other Required |
|  | BSC6930 Lectures in Contemporary Biology (1)  | Other Required |
|  | PCB6525 Molecular Genetics (3) | Core |

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| --- | --- | --- |
| Spring year 1 | BSC7910 Directed Research (5) | Research Req. |
|  | BSC6956 Scientific Grant Writing (3) | Core course |
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|  | BSC6930 Lectures in Contemporary Biology (1)  | Other Required |

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| Summer year 1 | BSC7910 Directed Research (6) | Research Req. |

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| --- | --- | --- |
| Fall year 2 | BSC7910 Directed Research (5) | Research Req. |
|  | Elective (3) | Elective |
|  | BSC6930 Lectures in Contemporary Biology (1)  | Other Req. |

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| --- | --- | --- |
| Spring year 2 | BSC7910 Directed Research (8) | Research Req. |
|  | BSC6930 Lectures in Contemporary Biology (1) | Other Required |

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| --- | --- | --- |
| Summer year 2 | BSC7910 Directed Research (6) | Research Req.  |

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| --- | --- | --- |
| Fall year 3\* | BSC7910 Directed Research (9) | Research  |
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*\*students should advance to candidacy by the close of the Fall of year 3. Until candidacy is attained, students must enroll in BSC 7910. Once candidacy has been achieved, students must enroll in BSC 7980, starting with the semester following admission to candidacy.*

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| Spring year 3 | BSC7980Doctoral Dissertation (9) | Research  |

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| Summer year 3 | BSC7980Doctoral Dissertation (6) | Research  |

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| --- | --- | --- |
| Fall year 4 | BSC7980Doctoral Dissertation (9) | Research  |

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| --- | --- | --- |
| Spring year 4 | BSC7980Doctoral Dissertation (8) | Research  |
|  | BSC7936 Ph.D. Seminar (1) | Research |

*\*Students are expected to finish in their 4th year but some may require additional time*

**COURSES**

For an updated list of course offerings see: <http://www.ugs.usf.edu/course-inventory/>