

DOCTOR OF PHILOSOPHY IN NATURAL SCIENCES: ORAL AND CRANIOFACIAL SCIENCES

Student Learning Outcomes

Students graduating from this program will:

- Demonstrate a thorough degree of knowledge in the disciplines
- Demonstrate an ability to use proper investigation techniques for the disciplines
- Use oral and written forms of communication to convey their ideas

Program Structure

Total Credits Required for Graduation: 42*

Residency requirements: Ph.D. students must satisfy the doctoral residency requirement by satisfactory completion of at least 18 credits in no more than 24 consecutive months. When satisfying the residency requirement, all Ph.D. students are subject to the following restrictions:

- The doctoral residency requirement must be satisfied no later than the end of the semester in which the student completes his or her comprehensive examinations.
- Students must achieve a cumulative graduate grade-point average of at least 3.0 in all courses counted toward satisfying the residency requirement.

* *Specific disciplines may require more credit hours for graduation. See discipline specific coursework requirements for more information on total credit hours required for graduation.*

Program Requirements

The coursework requirements encompass:

- A minimum of 12 credit hours of coursework within the primary area, accompanied by at least 12 dissertation hours. The primary disciplines retain the flexibility to potentially request more than the minimum credit hours.
- A minimum of 9 credit hours within a secondary discipline area, with the secondary discipline also having the option to specify additional credit hours beyond the minimum.
- A minimum of 30 classroom credits is required beyond the baccalaureate, including fundamental and advanced courses along with seminars.
- Any primary area discipline can be combined with any secondary area discipline.

Participating Disciplines

Participating disciplines encompass a range of fields, including:

- Biomedical and Health Informatics
- Cell Biology and Biophysics
- Chemistry
- Geosciences
- Mathematics
- Molecular Biology and Biochemistry
- Oral and Craniofacial Sciences
- Pharmaceutical Science
- Pharmacology
- Physics

Student Learning Outcomes

Students graduating from this program will:

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- Demonstrate an ability to use proper investigation techniques for the discipline
- Use oral and written forms of communication to convey their ideas

Oral and Craniofacial Sciences

Primary Discipline Coursework

Code	Title	Credits
A minimum of 12 credit hours of coursework within the primary area, accompanied by at least 12 dissertation hours.		
Required Core Curriculum:		
BIO-SCI 5751	Elements of the Scientific Method	1-2
BIO-SCI 5752	Research Methods in Oral and Craniofacial Sciences	1-5
RES-ME 5700	Introduction to Research Methodology	2-3
RES-ME 5704	Introduction to Biostatistics	2-3
Additional Courses Applicable to Discipline:		
BIO-SCI 5710	Genetics and Biochemistry of Cranial Facial Biology	
BIO-SCI 5739	Biomaterials for the Dental Specialist	
BIO-SCI 5740	Oral Pathology	
BIO-SCI 5742	Biomaterials for the Restorative and General Dentist	
BIO-SCI 5759	Special Problems in Pharmacology	
BIO-SCI 5760	Physiology of Oral Mineralized Tissues	
BIO-SCI 5790	Directed Research In Oral and Craniofacial Sciences	
BIO-SCI 5802	Immunopathology	
BIO-SCI 5805	Molecular Biology of Oral Microflora	
MEDB 5561	Responsible Conduct of Research	
Dissertation		12

Total Credit Hours: 42

Secondary Discipline Program Requirements

Code	Title	Credits
A minimum of 9 credit hours, selected from the applicable courses below		9
BIO-SCI 5751	Elements of the Scientific Method	
BIO-SCI 5752	Research Methods in Oral and Craniofacial Sciences	
RES-ME 5700	Introduction to Research Methodology	
RES-ME 5704	Introduction to Biostatistics	
BIO-SCI 5710	Genetics and Biochemistry of Cranial Facial Biology	
BIO-SCI 5739	Biomaterials for the Dental Specialist	
BIO-SCI 5742	Biomaterials for the Restorative and General Dentist	
BIO-SCI 5743	Advanced Seminar in Dental Biomaterials	
BIO-SCI 5760	Physiology of Oral Mineralized Tissues	
MEDB 5561	Responsible Conduct of Research	

Total Credits

9

Admission Requirements

In addition to the general minimum requirements for admission to Ph.D. study, an applicant must hold either (1) a baccalaureate degree, (2) an M.S. degree, or (3) a D.D.S. or equivalent degree. In general, an applicant will be expected to have a minimum cumulative GPA of 3.0 based on a 4.0 scale for previous education programs, including dental school (if applicable).

Applicants must also meet the following minimum GRE requirements:

- Quantitative: 150
- Verbal: 155
- Analytical Writing: 4.0

The TOEFL is required for all international applicants, who must have a score of at least 79. An IELTS score of 6.0 or above may be accepted in place of the TOEFL.

All application materials should be submitted prior to March 1 for students wishing to begin their study in the fall semester; however, applications will be accepted throughout the year. Evaluation criteria include the following:

- Transcripts. Analysis of transcripts from all prior institutions is required.
- Letters of recommendation. Three letters of recommendation are required from current or former teachers who are familiar with the applicant's past achievements and research ability.
- Personal statement from applicant. The applicant must submit a letter describing why he or she is interested in pursuing a Ph.D. study in oral and craniofacial sciences, how the experience of the program may be used by the candidate in the future, and a list of potential research interests.
- Interviews. Interviews are not required; however, interviews are preferred and will be arranged upon the candidate's request. Successful interviews may enhance the candidate's chance of acceptance.

Departmental Research Orientation

Enrollment in BIO-SCI 5751 required

- Ph.D. students will select and rotate through a minimum of four laboratories in the Department of Oral and Craniofacial Sciences conducting a short research project in each. At the end of the semester, a report is required reviewing the research project and instrumentation in each laboratory. Students are also required to attend the weekly Department of Oral and Craniofacial Sciences Seminar Series and the monthly Professional Development Seminar Series. Research presentations cover a variety of biological, engineering and behavioral science disciplines relevant to oral science education and the oral health care profession. Presentations will be by faculty, students, and invited guest lecturers.

Enrollment in BIO-SCI 5752 required

- As the student identifies a research focus for the dissertation project, they will begin reviewing the literature and relevant instrumentation in conjunction with a selected research advisor.

Seminar Series

- Graduate students are expected to attend the weekly Department of Oral and Craniofacial Sciences Seminar Series and the monthly Professional Development Seminar Series
Information available from Department of Oral and Craniofacial Sciences website at <http://dentistry.umkc.edu/oralbio/oralbiologysseminar.shtml> (<http://dentistry.umkc.edu/oralbio/oralbiologysseminar.shtml>)

Thesis and Dissertation Defense Exams

- Graduate students are expected to attend all thesis and dissertation defense exams

Other Discipline-Specific Special Requirements

Dissertation Research

In accordance with general Ph.D. program requirements, each student with Oral and Craniofacial Sciences as the primary discipline must submit a dissertation proposal, prepared in consultation with the student's dissertation chair, which describes a program of original research on a significant problem in Oral and Craniofacial Sciences. The proposal will be reviewed by the student's Ph.D. supervisory committee. The student may be required to revise and resubmit the proposal to the supervisory committee. A copy of the accepted proposal will then be forwarded to the School of Graduate Studies.

The student must provide evidence that a substantial portion of the dissertation will be submitted for publication to refereed journals. Such proof may be in the form of a manuscript in preparation for submission or a submitted manuscript. The student must submit the complete dissertation, in electronic form, to his or her faculty advisor for review and preliminary approval at least eight weeks before the expected date of graduation.

Appeals

In the event of disputes or special requests concerning a student's Ph.D. program, written appeals or documentation must first be submitted to the student's supervisory committee. If a resolution of the problem cannot be affected at that level, the written appeals process takes effect.

Academic Retention

A 3.0 or better grade-point average is required of all work applicable to the Ph.D. program. A Ph.D. student with oral and craniofacial sciences as a discipline is subject to termination from the Ph.D. program if: (1) his or her grade-point average falls below 3.0; (2) more than four hours of C (2.0) grades are received; or (3) any grade of D or F is received.

A recommendation for termination from the program will be made by the student's dissertation chair to the program director. The next level of review would be the department chair, associate dean for research and graduate programs, and then the Ph.D. executive committee and the Dean of the School of Graduate Studies.

Comprehensive Examination Guidelines

A Comprehensive Examination will be administered to all students enrolled in the Ph.D. program whose subject emphasis area is Oral and Craniofacial Sciences. The examination includes both written and oral components. Content of the Comprehensive Examination will be tailored to the student's field of research interest and prepared with input from all members of the student's supervisory committee.