Introduction

The Ph.D. degree will be awarded on completion of advanced work and original research culminating in successful defense of a dissertation. The requirements will be a minimum of 72 hours of graduate work, passing of a comprehensive examination, preparation and approval of a research prospectus, and completion and successful defense of a dissertation describing the results of the research. It is anticipated that the program will be completed in four or five years of full-time residence.

Applying to the Program

Prospective applicants are strongly encouraged to contact the Director of the Oral Sciences graduate program (Jeffrey-Banas@uiowa.edu) prior to submitting a formal application. Each academic year brings fluctuations in mentor availability and in the availability of student stipends. Consultation with the Director can determine if there is potential for matching the applicant’s research interest with a mentor.

If a formal application is encouraged, instructions and online submission forms can be found on the Graduate College webpage (https://grad.admissions.uiowa.edu/apply). Applicants will be requested to submit a personal statement describing past research experience and present research interests as well as how the completion of the Ph.D. program fits into their career goals. A personal interview may be requested and the candidate will be asked to have references familiar with their academic training submit letters of recommendation. Applicants will also be asked to submit scores from the Graduate Record Exam (GRE) or an equivalent evaluative exam (e.g. DAT, MCAT).

Applicants should possess a cumulative grade point average of at least 3.0 on a 4.0 scale. For students whose first language is not English, a minimum score of 550 (paper-based test) or 100 (internet-based test; no subscore lower than 17) on the Test of English as a Foreign Language (TOEFL) is required. Admitted students also need to take an on-campus English Proficiency Evaluation if their paper-based TOEFL score is less than 600.

The Major Advisor

In most instances the choice of mentor will have been agreed upon prior to admission to the program. If not, the student should identify an advisor during their first semester. The Major Advisor will typically be a member of the tenure-track faculty from the College of Dentistry possessing a Ph.D. or having commensurate training in research. Clinical faculty or faculty outside the College with active research programs may serve as primary mentors with the approval of the Graduate College and the Oral Sciences Program Committee which has the discretion to require appointment of a co-mentor from among the tenure-track research-intensive faculty. All Major Advisor selections must receive final approval from the Oral Sciences Program Committee.

The Major Advisor will assist the student in the selection of a Research Committee, in the matters of course work, in the scheduling and timing of the comprehensive examination, in preparation of a research prospectus and in matters relating to the conduct of research and preparation of the dissertation.
The Research Committee

The Research Committee will consist of a minimum of five members, at least four of whom must be tenure-track UI faculty members. At least two members must be in the student’s field of study and at least one member must be from outside the College of Dentistry. The chair of the committee must be a tenure-track faculty member, in most cases the Major Advisor. If the Major Advisor is not tenure-track then he/she may act as co-chair with a tenure-track member from the College of Dentistry. The members of the committee will be selected by the student and the Major Advisor, and approved by the Graduate College and Oral Sciences Program Committee. (See also: https://www.grad.uiowa.edu/system/files/Faculty%20Approval%20Table_0.pdf and https://www.grad.uiowa.edu/system/files/Committee%20Service%20FAQ.PDF).

Course Requirements

Each student will select a program of study in consultation with the Major Advisor, the Oral Sciences Graduate Director and the student's Research Committee. When applicable, students may also want to consult the Graduate Director in their clinical department. All students must complete the required courses and then select appropriate electives that support the chosen research focus.

The General Catalog of courses can be found at: http://catalog.registrar.uiowa.edu/. For the full listing of Oral Sciences courses see: http://catalog.registrar.uiowa.edu/dentistry/oral-science/#coursestext.

Students are expected to complete a minimum of 30 semester hours (s.h.) of didactic courses (required courses plus electives) as part of the 72 s.h. minimum necessary to complete the degree. Under special circumstances the minimum number of didactic courses may be reduced upon petition of, and agreement by, the Program Committee. Students may not exceed 15 s.h. in a semester.

Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ORSC:5200</td>
<td>Seminars in Dental Research</td>
<td>1 s.h.</td>
</tr>
<tr>
<td>ORSC:5210</td>
<td>Dental Science Research Methodology</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>ORSC:5212</td>
<td>Statistical Methods for Dental Research</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>ORSC:5215</td>
<td>Research Design in Dentistry</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>BMED:7270/BMED:7271</td>
<td>Scholarly Integrity &amp; Responsible Conduct of Research</td>
<td>2 s.h.</td>
</tr>
</tbody>
</table>

Students must register for this course for a minimum of 1 semester and complete at least two additional semesters in this course or a comparable seminar series.

Students must complete BOTH semesters but the order does not matter. Completion of the online CITI (Collaborative Institutional Training Initiative) training is a prerequisite.
This training is good for four years (clock starts upon entry to the graduate program) and must be repeated thereafter (for example, upon entering a 5th year of graduate study).

**Elective Courses**

Students within the Oral Sciences program have a wide spectrum of research interests. Consequently, the selection of elective courses is tailored to complement the individual student’s thesis research. Careful attention is to be paid to balancing the breadth of disciplines covered in the chosen courses with sufficient discipline-related depth for acquiring a focused area of expertise.

Specialty courses pertaining to scientific writing and communication include:

- **RHET:7500:0001** Science Communication in the Digital Age
- **BIOL:6188:0001** Seminar: Writing in Natural Sciences
- **RHET:7900:0001** Special Project for Graduate Students: Public Speaking for Academics
- **EALL:4130:0EXW** Introduction to Grant Writing
- **EPI:6100:0001** Writing a Grant Proposal
- **RHET:3085:0001** Advanced Speaking Skills

Graduate Certificate in College Teaching: [https://education.uiowa.edu/services/office-graduate-teaching-excellence-ogte/graduate-certificate-college-teaching](https://education.uiowa.edu/services/office-graduate-teaching-excellence-ogte/graduate-certificate-college-teaching). This is a minimum 12 s.h. program.

**Requirements for Good Academic Standing**

Students must maintain a cumulative GPA of 3.00 to remain in good academic standing. Students with a GPA below 3.00 after completing a minimum of 9 semester hours of graded graduate work within the Oral Sciences graduate program will be placed on probation. Thereafter, the student must raise the cumulative GPA to 3.00 or above within completing 9 more semester hours of graded graduate work to be removed from probation. Failure to do so will result in dismissal from the program. A student on probation will not be permitted to take comprehensive or final examinations leading to any degree or certificate, nor may the student receive any graduate degree or certificate. For additional information pertaining to academic standing, probation and dismissal, see the Graduate College webpage ([https://www.grad.uiowa.edu/manual-part-1-section-iv-academic-standing-probation-and-dismissal](https://www.grad.uiowa.edu/manual-part-1-section-iv-academic-standing-probation-and-dismissal)).

All students must convene their Research Committee approximately every six months to ensure that adequate progress is being made and to provide an opportunity to fine-tune course selection or research strategy. The Oral Sciences Program Director should be notified of the time and place for each meeting and has the discretion to attend as an observer.

**The Comprehensive Examination**

The comprehensive examination is intended to evaluate the candidate’s mastery of the principal field of study. The examination serves as a means of testing ability to interpret the literature, to formulate research questions and hypotheses and to present experimental approaches that answer questions and test hypotheses. It will usually be taken during the second or third year of study but no later than midway through the third year.
Examination Committee

The committee will consist of at least five members of the graduate faculty including the Major Advisor. At least one member must be from outside the College of Dentistry and not more than four individuals may be members of the candidate’s Research Committee. The membership of the Examination Committee must be approved by the Program Director who will also appoint the Chair of the Committee. The Major Advisor, co-mentors and outside members may not serve as Chair.

Format

The examination will have two components, a written proposal and an oral examination. The proposal will take the form of a research grant application in which the candidate will address a research topic or problem in the area of, but not identical with, their contemplated dissertation research. In order to select a research topic the student will first prepare an abstract for submission to the Comprehensive Examination Committee. This should be no more than two pages in length and will propose a hypothesis or question, describe the specific aims, the research approach to the problem, and how the proposal is distinct from the planned dissertation research. The Committee will consider the significance of the proposed hypothesis or question, the relevance of the Specific Aims to approach the problem and the clarity of the abstract. If these are not found to be adequate, the student can be requested to rewrite the abstract or formulate a new one, as appropriate. There will be only one opportunity to resubmit the abstract. Once the Examination Committee has approved the abstract, the student may proceed with the preparation of the formal proposal for the Examination. At this point, the student must not seek further advice from the major advisor, the Examination or Research Committees or other faculty, and writing must be accomplished without assistance. An exception to this rule is that the student may seek guidance in biostatistics as long as the person giving the guidance is not a member of the student’s examining committee. The guidance provided should be limited to steering the student in the right direction and answering questions about appropriate statistical analyses. See Appendix II instructions for preparing the Comprehensive Examination grant application.

The time allowed for preparation of the proposal following approval of the topic by the Examination Committee will be six weeks.

The Request for Doctoral Comprehensive Examination (https://www.grad.uiowa.edu/system/files/Req-Doc-Comp-Exam%20New_0.pdf) must be submitted at least 2 weeks in advance of the oral exam together with the Doctoral Plan of Study Summary Sheet (https://www.grad.uiowa.edu/sites/gc/files/Doc-POS-NEW%202%208%2016.pdf). The signed report of the comprehensive exam is due in the Graduate College within 14 days of the completion of the exam.

Following submission of the proposal, the Examination Committee will conduct an oral examination in which the student’s knowledge will be tested first with regard to the written proposal and then over general knowledge of the appropriate areas of oral science. The Examination Committee will vote, selecting one of three outcomes: 1) Satisfactory; 2) Reservations or 3) Unsatisfactory. Two or more votes for ‘unsatisfactory’ makes ‘unsatisfactory’ the Committee outcome. A vote of ‘reservations’ should be used when the Committee member feels the deficiencies were modest and can be readily rectified. The Committee then decides what actions will remedy the deficiencies such as additional course work or rewriting the proposal without the need for repeating the oral defense. In the event the Committee cannot reach a consensus, the Chair of the Committee will be the final arbiter. Should the outcome be
unsatisfactory, there will be one opportunity to retake the exam. The Committee may specify the extent to which the written proposal needs to be revised and the extent to which the subsequent examination will focus on the oral defense of the written proposal and/or general knowledge.

The Prospectus

In preparation for in-depth continuation of research leading to the dissertation, and typically in the semester following the completion of the comprehensive examination, the candidate will prepare a prospectus. This document of approximately 2 pages will set out the objectives of the research and include a brief review of the literature, the questions and hypotheses involved, the specific aims, and the methods to be used for collecting, analyzing, and interpreting the data. It is similar to the abstract for the comprehensive examination and should reflect thorough background research that supports the line of investigation. The Prospectus will be presented to the candidate’s Research Committee for approval or amendment and will serve as the template for Committee involvement in ensuring the candidate remains on a productive path as the research unfolds.

The Dissertation

The results of the candidate’s research will be presented in the form of a dissertation, prepared according to the regulations of the Graduate College. It is also expected that the body of research completed by the candidate will be submitted in the form of one or more first-author manuscripts to reputable peer-reviewed journals. The dissertation may include submitted/published manuscripts as chapters but is not merely a compilation of published works. An extensive review of the literature and discussion of the totality of research results is mandatory. The final examination will involve an oral examination open to the public and conducted by the Research Committee. The candidate will present the results of their research and will justify the objectives, methods and results of the investigation. Candidates may also be questioned on areas of knowledge that are related to, but not necessarily intrinsic to, the topic of investigation. The final examination outcome will be either satisfactory or unsatisfactory. Two or more votes for ‘unsatisfactory’ renders the Committee outcome as ‘unsatisfactory’. Reexamination may not take place until the next session and may be repeated only once at the discretion of the Oral Sciences Program Committee.

A Request for Final Examination: https://www.grad.uiowa.edu/system/files/Req-FinalExam-AdvanceDeg%20%281%29_1.pdf must be submitted at least 2 weeks prior to the final exam. The report of the final exam is due in the Graduate College no later than 48 hours after the exam.

Administration of the Program in Oral Science

The Program in Oral Science will be headed by the Director who will chair the Program Committee. The Director will monitor progress of students and meet with the Research Committee and Advisor as necessary to review student progress.

Program Committee Composition
The Program Committee will be chaired by the Program Director and consist of at least 3 Oral Sciences Graduate program faculty, a faculty representative from outside the College who has experience in Ph.D. training and mentorship, and 2 Ph.D. students currently enrolled in the Oral Sciences Graduate program. The terms of the Graduate program faculty will be three years; the terms of the Ph.D. students and outside representative will be one year. All terms are renewable, though all program faculty and students will be notified of expiring terms and will have the opportunity to volunteer or submit nominations. Voting for new members will be via e-mail to the Program Director.

**Program Committee Responsibilities**

1. The Program Committee will meet at least once a semester to review the program curriculum and discuss issues pertinent to its functioning.

2. The Program Committee will be responsible for approving selections of Major Advisors and the composition of Research Committees. These responsibilities may be accomplished via e-mail votes unless membership feels the need to convene the Committee.

3. The Program Committee will be responsible for approving applications to the Oral Sciences Ph.D. program and approving new faculty to the group of Program Faculty. These responsibilities may be accomplished via e-mail votes unless membership feels the need to convene the Committee. Faculty designated as belonging to the Program Faculty would be expected to have significant records of research and scholarly achievement. Program Faculty may serve in any capacity within the Oral Sciences Graduate program, for example as Major Advisor and as members and chairs of Research and Examination committees, in conjunction with the rules of the Graduate College.

4. The Committee will be convened as needed to arbitrate student or faculty grievances related to the functions of the Ph.D. program.

Student members of the Program Committee may vote on items that come under listing (1.) and for student admittance to the Graduate program as defined in listing (3.). For all other Program Committee functions the student members are invited to participate in discussion but must abstain from voting.
APPENDIX I

Timeline of Graduate Study

<table>
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<tr>
<th>Semester</th>
<th>1</th>
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<th>... as needed</th>
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<td>Formation of Research Committee</td>
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<td>Completion of Comprehensive Exam Committee; Abstract approval; 6-week prep; 2-week Grad College notice prior to oral exam.</td>
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<td>Repeat BMED 7270/7271 (start of 5th year)</td>
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<td>Complete dissertation research, publish results, defend thesis.</td>
</tr>
</tbody>
</table>

- Semester 1: Formation of Research Committee
- Semester 2: Completion of Most/All Didactic Coursework
- Semester 4: Comprehensive Exam must be completed
- Semester 6: Complete dissertation research, publish results, defend thesis.
- Semesters 3, 5, and 7: As needed
Appendix II

Oral Science Ph.D. instructions for preparation of the Comprehensive Examination written component (mock grant application).

Font

- Use Arial, Helvetica, Palatino Linotype or Georgia typeface, a black font color, and a size of 11 points or larger. A symbol font may be used to insert Greek letters or special characters; the font size requirement still applies.
- Type density, including characters and spaces, must be no more than 15 characters per inch.

Paper Size and Page Margins

- Use standard size (8½” x 11”) paper.
- Use at least a one-half inch margin (top, bottom, left, right) for all pages.
- The application must be single-sided and single-spaced.

Title of Project

- Limited to 81 characters and spaces.

Abstract and Lay Summary (1 page)

- Prepare an abstract that serves as a succinct and accurate description of the proposed work. The abstract should be able to stand apart from the remainder of the application and still convey the essence of the proposed work. State the broad, long-term objectives and specific aims, making reference to the health relatedness of the project. Describe concisely the research design and methods for achieving the stated goals. The abstract should be informative to persons working in the same or related fields. Avoid describing past accomplishments or the use of the first person.
- The lay description should be two or three sentences and describe the relevance of the proposed research to public health. Use plain language that can be understood by a general, lay audience.

Specific Aims (1 page)

- Provide background information that leads to the statement of a hypothesis or research question. Briefly relate the rationale and significance of undertaking the proposed research. Then
succinctly list the specific aims or objectives of the proposed research, e.g., to test a state hypothesis, create a novel design, solve a specific problem, challenge an existing paradigm or clinical practice, address a critical barrier to progress in the field, or develop new technology. Summarize the expected outcome(s), including the impact that the results will exert on the research field(s) involved.

Research Strategy (12 pages)

a. Significance

- Explain the importance of the problem or critical barrier to progress in the field that the proposed project addresses.

- Explain how the proposed project will improve scientific knowledge, technical capability, and/or clinical practice in one or more broad fields.

- Describe how the concepts, methods, technologies, treatments, services, or preventive interventions that drive this field will be changed if the proposed aims are achieved.

b. Innovation

- Explain how the application challenges and seeks to shift current research or clinical practice paradigms.

- Describe any novel theoretical concepts, approaches or methodologies, instrumentation or intervention(s) to be developed or used, and any advantage over existing methodologies, instrumentation or intervention(s).

- Explain any refinements, improvements, or new applications of theoretical concepts, approaches, or methodologies, instrumentation or interventions.

c. Approach

- Describe the overall strategy, methodology, and analyses to be used to accomplish the specific aims of the project. Explain how the data will be collected, analyzed, and interpreted as well as any resource sharing plans as appropriate.

- Discuss potential problems, alternative strategies, and benchmarks for success anticipated to achieve the aims.

- If the project is in the early stages of development, describe any strategy to establish feasibility, and address the management of any high-risk aspects of the proposed work.

- Point out any procedures, situations, or materials that may be hazardous to personnel and precautions to be exercised.
**Bibliography/Literature Cited**

-Literature cited in the application should be listed with complete names of all authors, the article and journal title, book title, volume number, page numbers, and year of publication. Follow scholarly practices in providing citations for source materials relied upon in preparing any section of the application.

-The references should be limited to relevant and current literature. While there is no page limit, it is important to be concise, yet accurate, in acknowledging sources of information.