The University of Iowa
College of Dentistry

THE MS PROGRAM IN ORAL SCIENCE
Introduction

The Master of Science (MS) degree is awarded upon satisfactory completion of 30 hours of graduate work, including the conducting of independent research leading to a dissertation, and a final examination. It is anticipated that the program will be completed in two years of full-time residence. Where the candidate is also involved in advanced clinical dental education, the time required for completion of the Master of Science program will be one year beyond that specified for the clinical training program by the relevant Academy when that period is two years or less.

Admission Requirements

For students whose first language is not English, a minimum score of 550 on the Test of English as a Foreign Language (TOEFL) is required. Students whose scores fall between 530 and 600 are required to sit for an English Proficiency Examination (EPE); candidates may be requested to also take the Test of Spoken English. These requirements are not absolute but will receive considerable weighing when the Admissions Committee considers applicants.

Students for the MS program must be enrolled in a clinical training program or a Department in the College of Dentistry. A member of the Admissions Committee will normally interview candidates during the formal selection process by the appropriate program or Department.

Course Requirements

The coursework will consist of required courses in the College of Dentistry covering research methodology, statistics and experimental design, together with selected courses covering aspects of the pathophysiology of oral and dental tissues, neoplasia, cariology, and infectious disease. Students will also attend Seminars in Dental Research. Other graduate courses may be recommended from basic science and related departments (see Appendix 1). A minimum of 21 hours of formal coursework will be required.

Each student will be advised initially on the choice of coursework by an ad hoc Research Committee consisting of three graduate faculty members suggested by the Program Director.

Research Committee

The research committee will consist of a minimum of three members of the graduate faculty, at least one of whom must be from outside the candidate's department. The Committee will be chaired by the major adviser. The Committee will be selected by the candidate and the major adviser, usually before the end of the first year of the program.
Research Prospectus

Prior to beginning research leading to the dissertation, the candidate will prepare a prospectus. This document will set out the objectives of the research and include a brief review of the literature, the questions and hypotheses involved, the methods to be used to answer these questions and for collecting, analyzing, and interpreting the data. The candidate's Research Committee will determine the exact format of the prospectus. Following Research Committee approval of the prospectus, the candidate will undertake research leading to the dissertation.

Research and Dissertation

The candidate will undertake a research investigation in the area delineated in the prospectus. Although not as comprehensive as a Ph.D. project, it is expected that the research will be original and not merely reproduce existing findings. No more than nine hours of credit will be allowed for thesis research and preparation. The research will form the basis of a dissertation, which will be presented and defended orally before the Research Committee. The dissertation defense will not be a substitute for the final examination.

Final Examination

The candidate will be examined orally by the Examining Committee, which will consist of the candidate's Research Committee. The examination will test the candidate's knowledge in the area of oral science.

ADMINISTRATION OF THE PROGRAM IN ORAL SCIENCE

The Program in Oral Science will be headed by the Director who will chair the Program Committee.

Program Committee

This committee consists of the Program Director, who will be the chair, and three members of the graduate faculty, one of whom will be a research intensive faculty member in the College of Dentistry, one of whom will be a graduate director in the College of Dentistry and one who will be from outside the College of Dentistry.

The Program Committee will have responsibilities for:

1. Reviewing the program curriculum.
2. Adding new faculty to the group of Program Faculty.
3. Admitting students to the program.
4. Arbitrating disputes between students and advisors and dealing with student or faculty grievances.
Program Faculty

The program core faculty will consist of research intensive faculty in the College of Dentistry, together with associated graduate faculty. These individuals will have significant records of research and scholarly achievement and experience in the supervision of advanced degrees. Graduate faculty from the College of Dentistry and elsewhere in the University may also participate on candidate’s committees.

As faculty change, it will be necessary to add new members to the Program Faculty. This decision will be made by the Program Committee and will be based on scholarly productivity, including externally funded research grants and experience in advising students at the M.S. and Ph.D. levels.

Appendix I

Oral Science: Core Courses

151:200 Seminars in Dental Research................................................................. 1 s.h.
Current state of research in a broad variety of areas in dentistry. Offered each semester.

151:210 Dental Science Research Methodology........................................... 2 s.h.
Description and illustration of practical and experimental procedures in dental research; evaluation of literature and design, writing of research protocols. Offered summer semesters.

151:215 Research Design in Dentistry....................................................... 2 s.h.
Clinical research and trial design. All aspects of clinical research design and performance, from subject recruitment to study design to human subjects’ protection issues, with an
emphasis on application of the principles of evidence-based dentistry. Offered spring semesters.

151:220 Pathophysiology of Skin and Oral Mucosa ............................................................ 2 s.h.
Biology of skin and oral mucosa and changes in the behavior of the tissues in a variety of physiological and pathological conditions. Offered alternate years. Prerequisite: 151:210.

151:230 Pathophysiology of Salivary Glands and Saliva ................................................... 2 s.h.
Innervation, structure, and function of the glands and their secretions in health and disease, and their role in the oral environment. Offered alternate years. Prerequisite: 151:210.

151:240 Pathophysiology of Pulp-Dentin Complex .............................................................. arr.
Biology of the tissue, with emphasis on pathological changes. Offered alternate years. Prerequisite: 151:210.

151:250 Current Concepts of Cariology ................................................................................ 2 s.h.
Etiology of dental caries, its pathogenesis and the development of preventive measures based on this knowledge. Offered alternate years. Prerequisite: 151:210.

151:260 Bone and Tooth Support Structures and Implants ............................................... 2 s.h.
Biology of bone and periodontal structures, including effects of disease process on these tissues and the biological basis the therapeutic use of dental implants. Offered alternate years.

151:275 Oral Microbiology and Immunology ...................................................................... 2 s.h.
Fundamental principles of microbiology and immunology, including dental aspects of host-parasite relations, immunological phenomena, and biological and clinical manifestations induced by major oral pathogens. Offered alternate years.

151:280 Advanced Dental Therapeutics ............................................................................... 1 s.h.
Antimicrobial, analgesic, related therapies; emphasis on drug/drug interactions, treatment plan modification, case analysis of medically compromised patient. Offered fall semesters.

151:290 Strategies for Teaching Problem Solving .............................................................. arr.
Problem-solving and teaching student self-learning strategies.
151:600  Research in Oral Science ................................................................. arr.
Thesis research; open only to candidates for the MS and Ph.D. degrees in Oral Science

111:202 Research Protocol Seminar ............................................................ 1 s.h.

111:204 Principles of Oral Epidemiology ......................................................... 3 s.h.
General principles of epidemiology, including retrospective, prospective and cohort study designs; validity and reliability; distribution and determinants of oral diseases - caries, periodontal disease, oral cancer, malocclusion, fluorosis, and HIV infection.

151:212 Statistical Methods for Dental Research ............................................. 3 s.h.
Descriptive methods, elementary probability, distributions, populations, and samples, methods for analyzing percentage data and paired and unpaired measurement data, regression, and correlation and analysis of variance.

111:215 Introduction to Statistical Computing .............................................. 2 s.h.
Use of statistical packages on mainframe or personal computer for data management and analysis.

111:224 Research Design in Dentistry ......................................................... 2 s.h.
Types of studies used in dentistry, design validity; sampling methodologies; major descriptive and experimental designs used in dental research; application of statistical tests to these designs.
### Oral Science: examples of elective courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>60:216</td>
<td>Cell Biology I</td>
<td>3</td>
</tr>
<tr>
<td>60:216</td>
<td>Cell Biology II</td>
<td>3</td>
</tr>
<tr>
<td>60:272</td>
<td>Seminar in Cellular &amp; Molecular Biology</td>
<td>1</td>
</tr>
<tr>
<td>61:147</td>
<td>Survey of Immunology</td>
<td>4</td>
</tr>
<tr>
<td>61:173</td>
<td>Laboratory Methods in Cellular Immunology</td>
<td>5</td>
</tr>
<tr>
<td>61:218</td>
<td>Electron Microscopy Techniques</td>
<td>3</td>
</tr>
<tr>
<td>77:224</td>
<td>Radioisotopes in Biological Research</td>
<td>3</td>
</tr>
<tr>
<td>82:236/84:236</td>
<td>Biomaterials Research Methodology</td>
<td>1</td>
</tr>
<tr>
<td>99:120</td>
<td>Biochemistry and Molecular Biology I</td>
<td>4</td>
</tr>
</tbody>
</table>