



University of Toronto

OFFICE OF THE VICE-PRESIDENT AND PROVOST

TO: Academic Policy and Programs

SPONSOR: Vivek Goel

CONTACT INFO: provost@utoronto.ca

DATE: March 24, 2004 for the meeting on May 12, 2004

AGENDA ITEM: 10b

ITEM IDENTIFICATION:

School of Graduate Studies: Proposal for the Faculty of Dentistry of a course-work only option in the M.Sc. program in Dentistry.

JURISDICTIONAL INFORMATION:

The Committee has general responsibility for policy on, and for monitoring, minor changes within degree programs.

PREVIOUS ACTION TAKEN:

HIGHLIGHTS:

The course-work only option to the current M.Sc. program within the Graduate Department, Faculty of Dentistry would involve clinical specialty training. The goal is to respond more effectively to the demands of contemporary clinical practice, and students' educational and training needs, and career goals. The M.Sc. combining thesis research and specialist training would remain in place with no changes and designated as the 'Specialty training with thesis option'. The new option, 'Specialty training with coursework only', would require the completion of all the coursework of the thesis degree, however, the thesis would be replaced by additional courses designed to provide the student with broad training in clinical, epidemiological or basic science research.

FINANCIAL AND/OR PLANNING IMPLICATIONS:

There are no new/additional financial resources required to implement the program change. The changes to the programs are planned to be included into the SGS Calendar for 2004-2005.

RECOMMENDATION:

For Information.



School of Graduate Studies

University of Toronto

April 15, 2004

Professor Vivek Goel
Interim Vice-President and Provost
Room 225, Simcoe Hall
27 King's College Circle
University of Toronto

Dear Professor Goel:

With respect to my original letter of March 15, 2004, I am writing to confirm that SGS Council approved the following motion at its meeting of March 23, 2004:

THAT SGS Council approve the proposal of the Faculty of Dentistry for a course-work only option in the M.Sc. program in Dentistry, as specified in the attachment, effective September 2004.

The motion and supporting documentation were attached with the letter of March 15, 2004.

Mr. Andrew Drummond, Secretary to the Committee on Academic Policy and Programs, has informed my office that the item will appear on the agenda of the May 12 meeting of AP&P, for information.

Yours sincerely,

Jane Alderdice
Secretary to SGS Council
and Coordinator of Policy, Program and Liaison

/smr

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|------|-------------|-------------|
| c.c. | T. Chan | U. De Boni |
| | A. Drummond | C. Johnston |
| | D. Locker | L. Yee |
| | S. Zaky | |

H:Council/FollowUp/2003-2004/March 23/Dentistry Program Requirement



School of Graduate Studies

University of Toronto

March 15, 2004

Professor Vivek Goel
Interim Vice-President and Provost
Room 225, Simcoe Hall
27 King's College Circle
University of Toronto

Dear Professor Goel:

The following motion is on the agenda of the upcoming March 23, 2004 SGS Council meeting:

THAT SGS Council approve the proposal of the Faculty of Dentistry for a course-work only option in the M.Sc. program in Dentistry, as specified in the attachment, effective September 2004.

The motion and supporting documentation are attached. Division IV Executive Committee approved the proposal at its meeting of March 2, 2004.

We will confirm this approval on March 24, after the SGS Council meeting. In the meantime, we hope you are able to place this item on the agenda of the Committee on Academic Policy and Programs meeting scheduled for March 31. Approval of the Committee on Academic Policy and Programs will permit inclusion of this new information into the SGS Calendar for 2004-2005. Please let me know if you require any further information.

On behalf of the Council of the School of Graduate Studies and pending SGS approval, I am presenting this item to Governing Council committees, for information.

Yours sincerely,

per Jane Alderdice
Secretary to SGS Council
and Coordinator of Policy, Program and Liaison

Encl.
/smr

| | | |
|------|--------------------------------|----------------------------|
| c.c. | T. Chan | U. De Boni |
| | A. Drummond (with attachments) | |
| | C. Johnston | D. Locker |
| | L. Yee | S. Zaky (with attachments) |

H:Council/FollowUp/2003-2004/March 23/Dentistry Program Requirement

4otion

School of Graduate Studies Council Tuesday, March 23, 2004

Item 9.

9. Program Requirement Changes:

9.3: Dentistry

MOTION (/) **THAT** SGS Council approve the proposal of the Faculty of Dentistry for a course-work only option in the M.Sc. program in Dentistry, as specified in the attachment, effective September 2004.

See attached.

NOTE:

Division IV Executive Committee approved the proposal at its meeting of February 10, 2004.

With SGS Council approval, this item will go to Governing Council committees for information.

Proposal for a coursework only option in the Faculty of Dentistry's MSc program involving specialist dental training

Proposal for a coursework-only option in the Faculty of Dentistry's MSc program involving specialist dental training

Background

The MSc program in the Faculty of Dentistry

The Faculty of Dentistry's Master of Science program currently offers two options. The first is a research-based program, consisting of a minimum of two years of study and predominantly based on research leading to a thesis. The minimum course requirement is the obligatory Seminars in Oral Health Sciences course and an additional half course. The second involves research leading to a thesis *and* advanced dental specialty training. The latter consists of all course work and clinical education as mandated by the Commission on Dental Accreditation guidelines for eligibility for Specialty, Fellowship or Board Certification in the following disciplines¹:

| Discipline: | Maximum number of students admitted per academic year |
|---|--|
| Dental Anaesthesia | 1 |
| Dental Public Health | 3 |
| Endodontics | 3 |
| Oral Pathology and Oral Medicine; Oral Pathology; Oral Medicine | 1 |
| Oral Radiology | 1 |
| Orthodontics | 4 |
| Oral and Maxillofacial Surgery and Anesthesia | 2 |
| Pediatric Dentistry | 2 |
| Periodontology | 3 |
| Prosthodontics | 4 (admitted in alternate years) |

All of these programs are a minimum of three years in duration, except for Dental Public Health (2 years); Oral Pathology; and Oral Medicine (3 years); Oral Pathology and Oral Medicine; and Oral and Maxillofacial Surgery & Anaesthesia (4 years). While all students are required to complete a common core of courses, there is considerable

¹ Except Dental Anaesthesia, which is not currently recognized as a Specialty in the Province of Ontario.

variation in training across these different disciplines and the specialty practice standards of the Royal College of Dentists of Canada.

Students undertaking this option are also required, as a component of their research training, to take the obligatory Seminars in Oral Health Sciences course and may be required to complete additional course(s) as required for the research/thesis component.

Although the MSc including specialty training is administered by the Faculty of Dentistry Graduate Department according to SGS policies and procedures, The Commission of Dental Accreditation of Canada requires that all specialties have an appropriately qualified Program Director responsible for ensuring the clinical training requirements of the program.

Proposal

Objective

To modify the current MSc program within the Graduate Department, Faculty of Dentistry, that involves clinical specialty training by offering a coursework-only option. The goal is to respond more effectively to the demands of contemporary clinical practice, and students' educational and training needs, and career goals. In this respect this proposal is consistent with other MSc programs at the University of Toronto approved by the Executive Committee of Division IV (such as the MSc in Biostatistics in the Department of Public Health Sciences and the MSc in Clinical Epidemiology in the Department of Health Policy, Management and Evaluation) that include thesis and coursework-only streams. If approved, this will mean that the Faculty's MSc program will allow appropriately qualified students to choose one of the following three options:

- 1) Thesis only
- 2) Specialty training with thesis option
- 3) Specialty training with coursework-only option

Each of these three options will have a common educational core that includes fulfillment of requirements for the obligatory course DEN 1001Y *Master's Seminars in Oral Health Sciences*. In addition, option 1) requires, as a minimum, successful completion of one-half course, while option 2) requires additional courses as appropriate given the research project undertaken, while option 3) requires completion of additional coursework in lieu of a thesis.

Rationale

Prior to 1999, the specialty training programs offered by the Faculty of Dentistry led to the awarding of a Diploma and certification as a dental specialist. Students who wished to complete a thesis-based Master of Science degree registered separately in the School of

Proposal for a coursework-only option in the Faculty of Dentistry's MSc program involving specialist dental training

Graduate Studies and spent an additional 1.0-1.5 years undertaking research for their thesis. The current MSc program replaced the Diploma in 1999 whereby all students undertaking specialist training are required to complete research leading to a thesis. This change enabled the Faculty of Dentistry to compete more effectively with programs offered by other Canadian and U.S. universities that provide clinical and research training and the award the more academically prestigious MSc. The M.Sc. specialty degree was designed to facilitate the the research training of students with academic career goals, and those students who would subsequently transfer to or undertake a PhD prior to seeking a full-time career in research and education. The addition of the thesis component meant that most programs were extended in length by one year.

The Faculty's experience over the past 5 years with the incorporation of M.Sc. specialty training have led us to appreciate that not all clinicians seeking specialty training wish to pursue a thesis-based graduate program. Some applicants wish to engage in specialty clinical or public health practice that may involve collaboration with full time clinical or population health researchers and/or clinical teaching. Moreover, there has been considerable evolution in clinical and public health practice with increased emphasis on evidence-based practice. Students require more extensive training in clinical and population health research methodologies to allow them to provide effective evidence-based care and to apply the principles of evidence based care in their future role as teachers and/or research collaborators. These students would be better served by an alternative program that offers a broader experience of clinical research methodology than can be achieved by the completion of MSc thesis level research. Consequently, this proposal for a coursework-only option is a response to the needs and demands of both students and Faculty for a program that better meets the varied future career goals and academic and practice needs of the applicant pool.

What would the thesis and coursework-only options that include specialty training involve?

The MSc combining thesis research and specialist training would remain in place and there would be no change to the current coursework, clinical training, and research/thesis requirements. This would be designated as the **specialty training with thesis option**.

The new option, **specialty training with coursework-only** would require the completion of all coursework and clinical training as per the requirements of the specialty training with thesis option. However, the thesis would be replaced by additional courses designed to provide the student with broad training in clinical, epidemiological or basic science research methodology appropriate for clinical or public health practice. As with other MSc programs offering thesis and coursework-only options, we believe that an additional four half-courses, with a minimum of one involving hands-on research experience, are equivalent to the work involved in the production of an MSc level thesis. These courses would be as follows:

1. *Three research methods courses designed to promote the student's understanding of and ability to practice and teach evidence-based health care and to collaborate in clinical and/or population-based research*

2. *A research practicum*

The courses required for 1. will be selected from among the research methods courses currently taught in the Faculty of Dentistry or courses offered by other graduate departments, that address issues integral to contemporary approaches to clinical and population-based research and evidence-based clinical and public health practice. Examples of courses that meet this requirement are listed in Table 1. As with the optional courses that are a feature of the current MSc program, a list of appropriate research methods courses will be compiled by the Graduate Department in consultation with Program Directors. Students will select these courses in consultation with the Director of their program of study and/or the supervisor of their research practicum for approval by the Graduate Chair.

The research practicum, which will count as a half course, will endeavour to provide students with hands-on experience of one or more components of the research process. This can include experience in analyzing an existing data set, undertaking a systematic review, and/or meta-analysis or a review article. This type of experience will give students the opportunity to use skills, which will benefit them in future, evaluation of the scientific literature. Further, the development of research interests, and clinical decision-making is gained by experience in, and an appreciation of, literature searching, hypothesis setting, experimental design, methodological limitations, and laboratory practice, and the writing of a paper for publication. The requirements for this course can be met by undertaking a research project or an essay in the form of a review article. In either case, the required outcome is a paper in a format suitable for publication.

The research practicum will be undertaken with the assistance of an appropriate supervisor (one with an active research program) and examined by a committee comprised of three faculty members, at least one of who is from the student's specialty discipline. A proposal for a new graduate level half course in the Faculty of Dentistry, "Research Practicum", will be submitted for approval should this program change be approved.

Examples of the thesis and non-thesis options for two specialty MSc programs (Periodontology and Dental Public Health) are shown in Tables 2 to 5.

How does the research practicum differ from original MSc level research?

A thesis leading to the award of the MSc degree requires a student to formulate a research question and/or hypothesis, review the literature, design a study, collect, analyze and

Proposal for a coursework-only option in the Faculty of Dentistry's MSc program involving specialist dental training

interpret original data, thereby providing experience in all aspects of the research process. The research practicum would offer a more limited research experience involving one or more of the components of the research process. The work produced during the research practicum would culminate in a paper in a format suitable for submission to a dental journal that would be examined by an examination committee. While it would involve the formulation of a research question or hypothesis, literature review and, depending upon the topic, analysis of existing data, it would not involve the collection of original data. Consequently, the research practicum will provide a more limited exposure to the research process than research leading to a MSc level thesis.

How many students would take the non-thesis option?

Although the number in each stream will vary from year to year, it is anticipated that at least one quarter to one third of the annual intake, or approximately 5 to 8 students, will select the non-thesis option.

Conclusions

In light of the above, it would seem appropriate to broaden the scope of the MSc programs including specialty training offered by the Faculty of Dentistry by implementing the kind of changes that have occurred in other MSc programs. The aim is to maintain the rigour and level of excellence of the current MSc and to meet the expanded and eclectic requirements of North American dental clinical specialty education.

Table 1: Examples of research methods courses

Faculty of Dentistry courses:

DEN 1030S – Critical Appraisal and Evidence-based Care
DEN 10245 – Experimental Methods in Caries Research
DEN 1008Y – Dental Health Care Services Research Methods
DEN 1022F – Investigating Pathogenic Biofilms

Other courses meeting degree requirements:

HAD 5302H – Controlled Clinical Trials
HAD 5305H – Systematic Reviews/Meta-analysis
HAD 5204H – Clinical Decision-making and Cost-effectiveness
HAD 5309H – Non-experimental Design for the Clinical Researcher
HAD 5305H – Evidence-based Guidelines
CHL 5203H – Survey Methods in the Health Sciences I
CHL 5204H – Survey Methods in the Health Sciences II
CHL 5220H – Community Health Appraisal Methods I
CHL 5221H – Community Health Appraisal Methods II
CHL 5110H – Theory and Practice of Program Evaluation
CHL 5111H – Qualitative Research Methods
CHL 5115H – Qualitative Analysis and Interpretation
CHL 5150H – Social Science Research Methods: Application to Health Issues
CHL 5404H – Research Methods in Epidemiology
CHL 5406H – Prospective Studies and Survival Analysis
CHL 5418H – Scientific Overviews in Epidemiology
CHL 5420H – Global Health Research Methods

This is not a comprehensive list of research methods courses available to graduate students. It is intended to indicate that there are multiple relevant courses that can be taken by individual students in order to increase their training and education in research methodology pertinent to evidence-based clinical or public health practice. Many require that the student completes a project or other assignment in order to give them hands on experience in research. For example, students who take Survey Methods in Health Sciences I must define a research problem and write a research proposal to address that problem, even though the research may not be implemented. It is also the case that the demands of the coursework-only option will lead to the development of additional research methods courses within the Faculty of Dentistry.

Proposal for a coursework only option in the Faculty of Dentistry's MSc program involving specialist dental training

| Table 2: MSc with specialist training in periodontology | |
|---|--|
| Thesis option | Coursework-only option |
| <p><i>Year 1: First term</i> DEN 1080Y – Biology of connective tissues CHL 5201F – Biostatistics DEN 1001Y/1100Y – Seminars in oral health sciences Periodontology – seminars and clinics Clinics Thesis Research</p> <p><i>Year 1: Second term</i> DEN 1080Y – Biology of connective tissues DEN 1001Y/1100Y – Seminars in oral health sciences Periodontology – seminars and clinics Clinics Thesis Research</p> | <p><i>Year 1: First term</i> DEN 1080Y – Biology of connective tissues CHL 5201F – Biostatistics DEN 1001Y/1100Y – Seminars in oral health sciences Periodontology – seminars and clinics Clinics First required research methods course</p> <p><i>Year 1: Second term</i> DEN 1080Y – Biology of connective tissues DEN 1001Y/1100Y – Seminars in oral health sciences Periodontology – seminars and clinics Clinics Second required research methods course</p> |
| <p><i>Year 2: First term</i> DEN 1077F – Oral radiology DEN 1022F – Investigating pathogenic biofilms DEN 1001Y/1100Y – Seminars in oral health sciences Clinical conferences Periodontology – seminars and clinics Clinics Thesis Research</p> <p><i>Year 2: Second term</i> DEN 1002S – Oral pathology DEN 1082H – Biomaterials for implant treatment in dentistry DEN 1001Y/1100Y – Seminars in oral health sciences Clinical conferences Periodontology – seminars and clinics Thesis Research</p> | <p><i>Year 2: First term</i> DEN 1077F – Oral radiology DEN 1022F – Investigating pathogenic biofilms DEN 1001Y/1100Y – Seminars in oral health sciences Clinical conferences Periodontology – seminars and clinics Clinics Third required research methods course</p> <p><i>Year 2: Second term</i> DEN 1002S – Oral pathology DEN 1082H – Biomaterials for implant treatment in dentistry DEN 1001Y/1100Y – Seminars in oral health sciences Clinical conferences Periodontology – seminars and clinics</p> |

Proposal for a coursework-only option in the Faculty of Dentistry's MSc program involving specialist dental training

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|--|--|
| <i>Year 3: First and second term</i> DEN 1001Y/1100Y – Seminars in oral health sciences Periodontology - seminars and clinics Clinical conferences Mount Sinai rotations Implant Prosthodontic Unit Oral Pathology rotation Elective graduate course Thesis Research | <i>Year 3: First and second term</i> DEN 1001Y/1100Y – Seminars in oral health sciences Periodontology - seminars and clinics Clinical conferences Mount Sinai rotations Implant Prosthodontic Unit Oral Pathology rotation Elective graduate course Research practicum |
|--|--|

| Table 3: Number of half courses required: MSc - Periodontology | | |
|---|----------------------|-------------------------------|
| | Thesis option | Coursework-only option |
| Year 1 | 5 | 7 |
| Year 2 | 6 | 7 |
| Year 3 | 2 | 3 |
| TOTAL | 13 | 17 |

Proposal for a coursework-only option in the Faculty of Dentistry's MSc program involving specialist dental training

| Table 4: MSc with specialist training in dental public health | |
|---|---|
| Thesis option | Coursework-only option |
| <p><i>Year 1: First term</i> DEN 1006Y – Dental public health seminars DEN 1040Y – Clinical epidemiology and biostatistics Oral Epidemiology Approved option Option in health promotion Clinical conferences Thesis research</p> <p><i>Year 1: Second term</i> DEN 1006Y – Dental public health seminars DEN 1040Y – Clinical epidemiology and biostatistics Oral Epidemiology Approved option in health economics/demography Clinical conferences Thesis research</p> | <p><i>Year 1: First term</i> CHL 5501H – Canada's health care system DEN 1006Y – Dental public health seminars DEN 1040Y – Clinical epidemiology and biostatistics Oral Epidemiology Approved option Option in health promotion Clinical conferences</p> <p><i>Year 1: Second term</i> DEN 1006Y – Dental public health seminars DEN 1040Y – Clinical epidemiology and biostatistics Oral Epidemiology Approved option in health economics/demography Clinical conferences First required research methods course</p> |
| <p><i>Year 2: First term</i> Public health practicum/major field project DEN 1030S – Critical appraisal and evidence-based care DEN 1001Y – Masters seminars in oral health sciences Approved option Clinical Conferences Thesis research</p> <p><i>Year 2: Second term</i> DEN 1001Y – Seminars in oral health sciences Management principles in Canadian dental health organizations Clinical conferences Thesis research</p> | <p><i>Year 2: First term</i> Public health practicum/major field project DEN 1030S – Critical appraisal and evidence-based care DEN 1001Y – Masters seminars in oral health sciences Approved option Clinical Conferences Second required research methods course</p> <p><i>Year 2: Second term</i> DEN 1001Y – Seminars in oral health sciences Management principles in Canadian dental health organizations Clinical conferences Third required research methods course Research practicum</p> |

| Table 5: Number of half courses required: MSc – Dental Public Health | | |
|---|----------------------|-------------------------------|
| | Thesis option | Coursework-only option |
| Year 1 | 10 | 11 |
| Year 2 | 5 | 8 |
| TOTAL | 15 | 19 |

SGS Calendar entry for Dentistry

Graduate Faculty

Full Members

J. E. Aubin, BSc, PhD
R. F. Casper, MD, FRCSC
D. G. Cvitkovitch, BSc, MSc, PhD, Canada Research Chair
J. Davies, BSc, PhD, BDS, DSc
D. A. Deporter, DDS, PhD, DipPerio
O. M. El-Mowafy, DDS, PhD, FADM
R. P. Ellen, DDS, CertPerio, CertOralMed&Microbio
E. D. Fillery, BSc, PhD
M. D. Grynpas, MSc, PhD
J. N. Heersche, BSc, PhD
J. W. Hu, BSc, MA, PhD
D. J. Kenny, BSc, DDS, DipPaedo, PhD
J. L. Leake, MSc, DDS, DDPH, FRCD(C)
B. Liebgott, DDS, MScD, PhD
H. Limeback, BSc, DDS, PhD
D. Locker, BDS, PhD
(Chair)
M. Manolson, BS, PhD
J. T. Mayhall, BA, MA, DDS, PhD
C. A. McCulloch, BSc, DDS, PhD, FRCD(C)
D. Mock, DDS, PhD, FRCD(C)
R. M. Pilliar, BSc, PhD, PEng
J. P. Santerre, BSc, MScEng, PhD
Z. Seltzer, DMD, Canada Research Chair
B. J. Sessle, BDS, BSc, MSD, PhD, FRSC, Canada Research Chair
A. Seth, BSc, MSc, PhD
J. Sodek, BSc, PhD
H. C. Tenenbaum, DDS, DipPerio, PhD, FRCD(C)
X.-M. Yu, MD, MSc, DScH
G. A. Zarb, BCHD, MSc, DDS, MSc, FRCD(C)

Members Emeriti

A. Bennick, MSc, DDS, PhD, DipPerio
R. C. Burgess, BSc, MSc, DDS
R. B. Ross, DDS, MScD, DipOrthodont, FRCD(C)
D. G. Woodside, BSc, DDS, MScD, PhD, FRCD(C)

Associate Members

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G. I. Baker, DDS, MS, FRCD(C), FICD
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 P. Judd, BSc, DDS, DipPaedo, MSc
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 A. Laporte, PhD
 H. P. Lawrence, DDS, CertifRestorDentistry, CertifPlanningSystems&ServDentCare, MSc, PhD
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 L. E. Tam, DDS, MSc
 K. C. Titley, BDS, LDS, RCS, DipPaedo, FRCD(C), MScD
 B. Tompson, DDS, DipPaedodont, DipOrthodont
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The Faculty of Dentistry offers a graduate program leading to either a Master of Science or Doctor of Philosophy degree. This graduate program is intended for:

1. students who have a degree in dentistry and who are pursuing research training and advanced clinical education leading to qualification in one of ten dental specialty disciplines; and
2. students, both dentists and non-dentists, who are pursuing graduate research training without advanced clinical education.

Consequently, both the Master of Science and the Doctor of Philosophy degrees have a common core of coursework and consist of three options, with each having varying additional research and training requirements.

Degree of Master of Science

1) Thesis option

Program requirements

The program will ordinarily require one year of full-time registration; however, it is the Department's expectation that students will normally remain in full-time attendance on campus to enable full participation in departmental activities for two years. The first year of the program will include development of a research project and proposal, and course work, while the second year will be devoted largely to research and thesis completion and defence. Course work will normally include, as a minimum, fulfillment of the requirements for the course DEN 1001Y *Master's Seminars in Oral Health Sciences* and successful completion of an additional half course. Exemptions may be granted for previously completed course work at the bachelor's level.

Admission requirements

Candidates shall hold a four-year Bachelor of Science degree, Doctor of Dental Surgery or an equivalent degree, with at least mid-B standing from a recognized university in a discipline appropriate to the field of dentistry.

2) Specialist dental training - thesis option

Program requirements

The Department offers a Master of Science degree for dental graduates seeking advanced training in a clinical specialty as well as training in research. This program requires two to four years of full time registration, depending upon the clinical specialty, and involves completion of an original research project culminating in an oral defence of a written thesis, and completion of clinical and didactic coursework requirements as necessary to meet Canadian Dental Associate accreditation requirements for the chosen clinical

specialty. In addition, students must fulfill the requirements of the obligatory course DEN 1001Y *Master's Seminars in Oral Health Sciences* for a minimum of one year. Upon completion of all program requirements students are eligible for the M.Sc. degree, and for Specialty, Fellowship, or Board Certification in one of the dental specialties. For further information, please consult the Faculty of Dentistry Calendar or Web site.

Admission requirements

Candidates shall hold the degree of Doctor of Dental Surgery or an equivalent degree, with at least a mid-B standing from a recognized university.

3) Specialist dental training – coursework only option

Program requirements

The Department also offers a Master of Science degree for dental graduates seeking advanced training in a clinical specialty in which additional coursework is undertaken as an alternative to a thesis. This program requires two to four years of full time registration, depending upon the clinical specialty, entails completion of all clinical and didactic coursework necessary for accreditation in the chosen specialty along with three half-courses in clinical, epidemiological, or basic science research methodology appropriate for clinical or public health practice and a research practicum. Upon completion of all program requirements students are eligible for the graduate degree, and for Specialty, Fellowship, or Board Certification in the chosen dental specialty.

Admission requirements

Candidates shall hold the degree of Doctor of Dental Surgery or an equivalent degree, with at least a mid-B standing from a recognized university.

Program Transfer – MSc to PhD

M.Sc. students pursuing either of options 1) or 2), who are demonstrating excellent progress in all facets of their program, may apply to transfer from the ¹Degree of M.Sc. to the Ph.D. The transfer examination will take place up to 18, and in exceptional circumstances, 24 months after entry into the M.Sc. program. Regulations governing such transfers are available from the Graduate Department of Dentistry. Students registered in the specialty training coursework-only option will not be permitted to transfer to the PhD degree, but may apply to the PhD program following completion of the MSc. Degree.

¹ Transfer time may vary for candidates in the M.Sc. Specialty Thesis Stream

Degree of Doctor of Philosophy

1) Full-time research option

Program requirements

Candidates undertake customized programs, approved by an advisory committee and the Graduate Chair of Dentistry, comprising advanced study and original research culminating in the defence of a thesis. Minimum course requirements include completion of the course DEN 1100Y *Doctoral Seminars in Oral Health Sciences*, plus one additional full course. Exemptions may be granted for M.Sc. course work from closely related disciplines. This includes students transferring from M.Sc. to Ph.D. programs. Programs of study for B.Sc. students will normally include additional course-work requirements. Although the minimum residency requirement is one year, it is the Department's expectation that students will normally remain on campus for four years.

After 12 months and within 18 months of starting a Ph.D. program, candidates must pass a qualifying oral examination to demonstrate an adequate capacity for oral health sciences research through previous work and will be examined on their thesis proposal and their breadth of knowledge relative to the research project. Candidates are also expected to:

- 1 participate in all graduate research activities of the advisor's research group;
- 2 present at meetings and publish original research findings in timely fashion; and
- 3 participate as members of departmental and student committees as applicable.

In all cases, candidates will consult with the Graduate Chair of Dentistry who will appoint a committee to plan and arrange their coursework and research programs. The committee and the Graduate Chair must approve the entire course of study. The student's supervisor will chair the committee. The committee will closely monitor the student's ability to sustain satisfactory performance and will report semi-annually to the Graduate Chair for approval and continuance of candidacy.

Admission requirements

Candidates are normally admitted to a four-year Ph.D. program with an appropriate master's degree, or equivalent, with at least an A standing from a recognized university in a discipline appropriate to the intended field of doctoral study. However, under exceptional circumstances, the Department may admit a highly qualified candidate with an appropriate four-year Bachelor of Science in a discipline appropriate to the field of dentistry or a Doctor of Dental Surgery degree with at least an A standing from a recognized university.

2) Full time program combined with dental specialty training option

Program requirements

The Department offers a Doctor of Philosophy degree for exceptional dental graduates seeking to combine a Ph.D. degree with advanced training in a clinical specialty. Applicants intending to train as clinician/scientists, aspiring to teaching and research careers in the dental field, are considered on an individual basis. Programs require completion of an original research project culminating in an oral defence of a thesis. Minimum course requirements include completion of the course DEN 1100Y *Doctoral Seminars in Oral Health Sciences*, plus one additional full course, together with, for the chosen clinical specialty, completion of clinical and didactic coursework requirements.

All candidates will consult with the Graduate Chair of Dentistry who will appoint a committee to plan and arrange their course and research programs. The committee and the graduate chair must approve the entire course of study. The student's supervisor will chair the committee. The committee will closely monitor the student's ability to sustain satisfactory performance and will report semi-annually to the graduate chair of Dentistry for approval and continuance of candidacy.

After 12 months and within 18 months of starting the Ph.D. program, candidates must pass a qualifying oral examination to demonstrate an adequate capacity for oral health sciences research through previous work and will be examined on their thesis proposal and their breadth of knowledge relative to the research project. Candidates are also expected to:

- 1 participate in all graduate research activities of the advisor's research group;
- 2 present at meetings and publish original research findings in timely fashion; and
- 3 participate as members of departmental and student committees as applicable.

The addition of the clinical and didactic courses for a clinical specialty will normally increase the amount of time for the Ph.D. degree by two years, depending upon the particular clinical specialty undertaken, and program completion will be contingent upon completion of all requirements for the research and specialty training components of the program. Upon completion, students are eligible for the graduate degree, and for Specialty, Fellowship, or Board Certification in one of the dental specialties. For further information, please consult the Faculty of Dentistry Calendar or Web site.

Admission requirements

The minimum entry requirement is a Doctor of Dental Surgery degree with at least an A standing from a recognized university. Evidence of research experience or research potential is normally required.

3) Flexible-time option

The Department offers a flexible-time Ph.D. program for selected students whose career goal is a full-time academic position in a clinical discipline. Candidates concurrently establish their teaching and academic credentials. The major goal upon program completion is to enable candidates to compete for university tenure-stream professorial positions in their clinical science discipline. The program, which is dedicated to research experience, does not involve clinical training other than clinical research methodology, and entails completion of the research and course work requirements for the Ph.D. degree half time, while teaching in a clinical discipline half time.

Appropriate research supervision and advisory committee membership, customized plan of study, and timetable for the completion of the degree requirements, as approved by the Graduate Chair of Dentistry, will be in place at program commencement. The Graduate Chair monitors progress by review of completed advisory committee reports based on annual meetings of the student with the supervisory committee. Although the minimum residency requirement for the Ph.D. is one year, the anticipated completion date for the flexible-time Ph.D. program will be within five to six years from the registration date. The maximum time for completion will normally be eight years.

Candidates are required to conduct research leading to completion and defence of a thesis and complete minimum course work requirements, which includes DEN 1100Y *Doctoral Seminars in Oral Health Sciences*, plus one additional full course). As with other options in the PhD program, candidates must pass a qualifying oral examination 12 to 18 months after commencement to demonstrate an adequate capacity for oral health sciences research at the doctoral level. They are also expected to:

- 1 participate in all graduate research activities of the advisor's research group;
- 2 present at meetings and publish original research findings in timely fashion; and
- 3 participate as members of departmental and student committees as applicable.

Admission requirements

Applicants must meet all School of Graduate Studies and Graduate Department of Dentistry admission requirements for entry to the Ph.D. program. In addition, applicants must have attained a professional degree equivalent to the University of Toronto D.D.S. and a graduate degree equivalent to the University of Toronto M.Sc. Preference is given to:

- 1 applicants who have completed specialty education equivalent to the standard required for licensure as a specialist by the Royal College of Dental Surgeons of Ontario and
- 2 applicants who hold a University appointment in Canada at an academic standard equivalent to the University of Toronto Lecturer.

Collaborative Programs

The department participates in the following collaborative programs:

1. Aging and the Life Course
2. Biomedical Engineering
3. Neuroscience
4. Toxicology

For more details, consult the separate entries in this calendar.

Courses of Instruction

Not all courses are offered every year. The Department should be consulted each session as to course offerings.

DEN 1001Y^o and DEN 1100Y^o, designed to enhance critical analysis and presentation skills, involve seminars on faculty and student research, critiques on student presentations, and participation in Research Day. These seminars are required as part of the program for all M.Sc. and Ph.D. students.

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|------------------------|---|
| DEN 1001Y ^o | Master's Seminars in Oral Health Sciences (Credit/No Credit) |
| DEN 1002H | Oral Pathology/ <i>G. Bradley, Staff</i> |
| DEN 1003H | Preventive Dentistry/ <i>H. Limeback, Staff</i> |
| DEN 1006Y | Seminars in Dental Public Health/ <i>J. Leake, Staff</i> |
| DEN 1007H | Oral Radiology/ <i>M. J. Pharoah, Staff</i> |
| DEN 1011Y ^o | Advanced Seminars in Oral Pathology/ <i>R. J. McComb, Staff</i> |
| DEN 1012Y ^o | Oral Medicine/ <i>D. Mock, Staff</i> |
| DEN 1013Y ^o | Oral Surgical Pathology/ <i>R. J. McComb, Staff</i> |
| DEN 1016H | Occlusion: Function and Dysfunction/ <i>B. J. Sessle, G. A. Zarb, Staff</i> |
| DEN 1017H | Temporomandibular Disorders/ <i>G. A. Zarb, T. T. Dao, Staff</i> |
| DEN 1022H | Investigating Pathogenic Biofilms/ <i>R. P. Ellen, Staff</i> |
| DEN 1024H | Experimental Methods in Caries Research/ <i>R. C. Burgess, Staff</i> |
| DEN 1030H | Critical Appraisal and Evidence-Based Care/ <i>J. Leake, Staff</i> |
| DEN 1040Y | Dental Clinical Epidemiology and Biostatistics/ <i>Staff</i> |
| DEN 1060H | Oral Physiology: Sensory and Neuromuscular Function/ <i>B. J. Sessle</i> |
| DEN 1070H | Advances in Dental Materials Science/ <i>P. Santerre, Staff</i> |
| DEN 1080Y | Biology of Connective Tissues/ <i>C. A. G. McCulloch, H. C. Tenenbaum</i> |
| DEN 1081H | Bone Interfacing Implants/ <i>J. E. Davies, Staff</i> |
| DEN 1082H | Biomaterials for Implant Treatment in Dentistry/ <i>P. A. Watson, Staff</i> |
| DEN 1084Y | Growth and Development of Head and Neck/ <i>Staff</i> |
| DEN 1097Y | Advanced Oral Radiology/ <i>M. J. Pharoah, Staff</i> |
| DEN 1098H | Reading Course in Oral Biology/ <i>Staff</i> |
| DEN 1100Y ^o | Doctoral Seminars in Oral Health Sciences (Credit/No Credit)/ <i>Staff</i> |

^oCourses which may continue over a program. The course is graded when completed.