REGULATIONS FOR THE DEGREE OF MASTER OF SCIENCE IN DENTAL MATERIALS SCIENCE (MSc[DMS])

These regulations apply to candidates admitted in 2017-2018 and thereafter.

(See also General Regulations and Regulations for Taught Postgraduate Curricula)

Any publication based on work approved for a higher degree should contain a reference to the effect that the work was submitted to the University of Hong Kong for the award of the degree.

The degree of Master of Science in Dental Materials Science (MSc[DMS]) is a postgraduate degree awarded following the satisfactory completion of a prescribed course of study and research related to the use of materials in dental practice.

Admission requirements

D273 To be eligible for admission to the curriculum for the degree of Master of Science in Dental Materials Science, a candidate shall:

(a) comply with the General Regulations and the Regulations for Taught Postgraduate Curricula;

(b) hold

(i) the degree of Bachelor of Dental Surgery or Bachelor of Science of this University; or

(ii) a degree or other qualification of equivalent first-degree standard from another university or comparable institution accepted for this purpose;

(c) for a candidate who is seeking admission on the basis of a qualification from a university or comparable institution outside Hong Kong of which the language of teaching and/or examination is not English, shall satisfy the University English language requirement applicable to higher degrees as prescribed under General Regulation G2(b); and

(d) satisfy the examiners in a qualifying examination if required.

D274 A candidate who does not hold a Bachelor's degree of this University or a degree or other qualification of equivalent standard may in exceptional circumstances be permitted to register if the candidate can demonstrate adequate preparation for studies at this level and satisfies the examiners in a qualifying examination.

Qualifying examination

D275 (a) A qualifying examination may be set to test a candidate's formal academic ability or his or her ability to complete the prescribed courses of study. It shall consist of one or more written papers or the equivalent and may include any or all of a project report, practical examination or oral examination.

(b) A candidate who is required to satisfy the examiners in a qualifying examination shall not be permitted to register until he has satisfied the examiners in the examination.

Award of degree

D276 To be eligible for the award of the degree of Master of Science in Dental Materials Science, a candidate shall

(a) comply with the General Regulations and the Regulations for Taught Postgraduate Curricula; and

(b) complete the curriculum and satisfy the examiners in accordance with the regulations set out below.

Period of study

D277 The curriculum shall normally extend over one academic year of full-time study or two academic years of part-time study. Candidates shall not be permitted to extend their studies beyond the maximum period of registration of two academic years of full-time study or four academic years of part-time study, unless otherwise permitted or required by the Board of the Faculty.

Completion of curriculum

D278 To complete the curriculum, a candidate shall

(a) satisfy the requirements prescribed under TPG 6 of the Regulations for Taught Postgraduate Curricula;

(b) follow instruction in the courses prescribed and complete satisfactorily all prescribed coursework requirements, including practical work;

(c) satisfy the examiners in all examinations as may be required; and

(d) complete and submit a dissertation (or project report portfolio) which satisfies the examiners.

Dissertation/Project report portfolio

D279 The title of the dissertation or of project reports shall be submitted for approval not later than April 30 in the final academic year of study, and the dissertation or project report portfolio shall be submitted not later than August 15 in the same year; the candidate shall submit a statement that the dissertation or project report represents his/her own work undertaken after registration as a candidate for the degree. The examiners may prescribe an oral examination on the subject of the dissertation or project report.

Assessments

D280 Any assessment of the candidate's coursework during the course of study, including written assignments, shall be taken into account in determining the candidate's overall result.

D281 Assessments may take the form of written papers, oral and practical examinations, assessments of coursework, or a combination of these methods and, in the case of part-time study, may be held in each year of study.

D282 A candidate who has failed to satisfy the examiners in any part of the assessments may be

permitted to present himself/herself again for assessment at a time to be determined by the Board of Examiners, with or without repeating any part of the curriculum; or he/she may be recommended for discontinuation of studies under the provisions of General Regulation Gl2.

D283 A candidate who has presented a dissertation or project report portfolio which has failed to satisfy the examiners may be permitted to revise and re-present the dissertation or project report portfolio within a period to be determined by the Board of Examiners; or he/she may be recommended for discontinuation of studies under the provisions of General Regulation Gl2.

D284 In accordance with TPG 5(c), a candidate who has exceeded the maximum period of registration specified in Regulation D277 shall be recommended for discontinuation of studies.

D285 Failure to take any examination as scheduled normally shall result in automatic course failure. A candidate who is unable, through his or her illness, to be present at an examination may apply in writing within two weeks of the examination for permission to be examined at some other time to be determined by the Board of Examiners.

Grading system

D286 Individual courses shall be graded as “Pass” or “Fail”.

Assessment results

D287 Upon successful completion of the curriculum, candidates who have shown exceptional merit may be awarded a mark of distinction, and this mark shall be recorded in the candidates' degree diploma.

August 18, 2017

SYLLABUSES FOR THE
MASTER OF SCIENCE IN DENTAL MATERIALS SCIENCE

A curriculum of advanced study designed to develop a broad knowledge of the principles underlying the mechanical, physical, and chemical properties of dental biomaterials and other materials in dentistry; structure at molecular, microscopic, and macroscopic levels; mechanisms of reaction and mechanical failure; and behaviour in all relevant aspects of each class of material used in dentistry, in relation to their function, application handling, safety and service.

The curriculum extends over no less than one academinc year of full-time study or two academic years of part-time and is equivalent to 72 credits. The curriculum includes lectures, tutorials, seminars, self-guided learning, journal-based learning, laboratory work together with project assignments and the preparation of a MSc(DMS) project.

Syllabus:

The curriculum includes the following:

- impression materials;
- model and waxes;
- cements and lining materials;
- dental amalgams;
- porcelain and zirconia;
- metal-ceramic systems;
- abrasives and polishing materials;
- biomedical materials;
- investment materials;
- dental resin-based restoratives;
- dental metals and alloys;
- acrylic and other polymers;
- implant materials and surfaces;
- solders and fluxes;
- instruments, tools, and other equipment;
- fibre-reinforced composites (FRC)

and other relevant materials. It will also include, where appropriate, the processes used in fabrication and finishing, interactions in the biological context of usage (e.g., toxic and other hazards), and the recognition of faults and their causation.

Emphasis is placed on the explicability of materials-related phenomena from structure-property relationships, in the context of clinical teaching, on the universality and applicability of the ideas to materials in general (as opposed to products), and on the means by which dental practitioners may make knowledge-based rational decisions concerning treatment.

The theoretical course is reinforced by practical experience of the design, execution, interpretation, and reporting of experimental investigation of aspects of properties or behaviour of selected materials, thereby encouraging deeper exploration of general and particular principles.

On completion of the curriculum, the student should have a good knowledge of all relevant concepts and be competent in justifying selection criteria and manipulation instructions for all classes of materials relevant to the practice of dentistry. The student will also have gained competence in a range of laboratory techniques, experimental principles, literature searching, and scientific writing.

Curriculum structure:

A. Faculty Core Courses (9 credits)

DENT6023 Oral Epidemiology and clinical Research Methodology (3 credits)
DENT6024 Introduction to statistical analysis in Dental Research (3 credits)
DENT6025 Multivariable statistical analysis in dental research and use of statistical software (3 credits)
DENT7030 Dissertation Writing for Master of Dental Surgery and Master of Science – An Induction Course (non-credit bearing)

B. Discipline Specific Courses (27 credits)

DENT7505: Biomaterials I (3 credits)
DENT7506: Biomaterials II (3 credits)
DENT7502: Guided Learning Tutorials (15 credits)
DENT7503: Laboratory Class + Theme-based Sessions (3 credits)
DENT7501: DMS Scientific Writing + DMS Seminar Presentation (3 credits)

C. Research Component (36 credits)
DENT7504: Laboratory Research Component (18 credits)
DENT7500: Capstone experience: MSc(DMS) Project + Scientific Manuscript (18 credits)

Description of courses

DENT7505 Biomaterials I (3 credits)

This course aims to introduce the post-graduate students to the various types of dental materials and biomaterials. On completion of this course, a student should be able to critically appraise knowledge and reports from various metallic, polymeric and ceramic materials used in dentistry. The student should also be able to choose an appropriate method for assess and evaluate biomechanical, chemical and biological properties of dental materials.

Assessment: *One 2-hour written paper; 100% examination*

DENT7506 Biomaterials II (3 credits)

The course Biomaterials II aims to introduce and guide the students to silicon chemistry and its vast amount of applications in dental materials and biomaterials. Moreover, the course explains various biomechanical features in dentistry. Dental ceramics and some novel synthetic materials for clinical use are described in details and introduced to the student to critically appraise them. The use of diverse dental cements with their indications will be explained for the student for critical selection in the clinic. On completion of this course, a student should be able to address biomechanics, adhesion and durability aspects in contemporary dentistry.

Assessment: *One 2-hour written paper; 100% examination*

DENT6023 Oral Epidemiology and clinical Research Methodology (3 credits)

This course aims to introduce the students to the various types of epidemiological studies and how to conduct clinical trials. On completion of this course, a student should be able to critically appraise reports from oral epidemiological studies and the level of evidence generated. The student should also be able to choose an appropriate design for a clinical study on a specific topic of interest.

Assessment: *One 2-hour written paper; 100% examination*

DENT6024 Introduction to statistical analysis in Dental Research (3 credits)

This course aims to introduce the students to the basic statistical methods used in dental research; the interpretation of results of statistical analysis and the statistical content of published research papers. On completion of this course, a student should be able to address statistical issues when formulating a research project, and to appraise the basic statistical content of a published dental research paper.

Assessment: *One 2-hour written paper; 100% examination*

DENT6025 Multivariable statistical analysis in dental research and use of statistical software (3 credits)

This course aims to introduce the students to the multivariable statistical methods used in dental research and to provide basic training to the students in using the software SPSS for Windows to analyze dental research data. On completion of this course, a student should be able to appraise the statistical contents of a published dental research paper, and be able to carry out basic analysis of the data collected in a dental research using the software SPSS for Windows.

Assessment: *One 2-hour written paper; 100% examination*

DENT7030 Dissertation Writing for Master of Dental Surgery and Master of Science – An Induction Course (non-credit bearing)

This Induction course of 7.5 hours aims to raise course participants' awareness of essential aspects of academic writing which contribute to overall communicative success in dissertations. Its ultimate aim is to provide a useful induction experience so that you will be able to approach your writing with more confidence and skill at key stages of your research. Specific objectives are listed as themes in the course schedule.

Assessment: *No formal assessment*

DENT7502 Guided Learning Tutorials (15 credits)

The students learn to evaluate, assess, compare, contrast, test and select restorative dental materials for laboratory and clinical use and how to manipulate these materials in appropriate way. The students will be introduced to learn to be aware of the proper procedures for health, safety, and infection control with respect to dental biomaterials. In pedagogy we apply active learning according to the Bloom's taxonomy. Learning is based on remembering, understanding, applying, analyzing, evaluating and creating knowledge on dental materials and biomaterials.

Assessment: *One 3-hour written paper; 100% examination*

DENT7503 Laboratory Class + Theme-based Sessions (3 credits)

The students learn to evaluate, assess, compare, contrast, test and select restorative dental materials for laboratory and clinical use and how to manipulate these materials in appropriate way. The students will be introduced to learn to be aware of the proper procedures for health, safety, and infection control with respect to dental biomaterials. Theme-based sessions are shared with BDS II-V students and they will be provided by DMS. Their topics and contents may vary time after time.

Assessment: *100% coursework, and attendance*

DENT7501: DMS Scientific Writing + DMS Seminar Presentation (3 credits)

The students learn to write a scientific article manuscript and how in such an article to evaluate, assess, compare, contrast, test and select restorative dental materials for laboratory and clinical use and how to manipulate these materials in appropriate way. Integrity and honesty in science will also be covered. Under moderation, each MSc(DMS) student will give an oral presentation (ca. 20 min) about his/her research, followed by discussion, at the annual DMS Scientific Seminar. This course is open to every TPG/RPG student at our faculty.

Assessment: *One oral presentation on topics related to the candidate's field of study, and attendance*

DENT7504 Laboratory Research Component (18 credits)

The students learn to evaluate, assess, compare, contrast, test and select dental (or related) materials for laboratory and clinical use and how to manipulate these materials in appropriate way. The students will be introduced to learn to be aware of the proper procedures for health, safety, and infection control with respect to dental biomaterials and in a research laboratory. Because this course is an outcome-based modern higher educational level course, the students will be facilitated into skills in scientific research.

Assessment: *100% coursework, and attendance*

DENT7500: Capstone experience: MSc(DMS) Project + Scientific Manuscript (18 credits)

This project-based course provides experience of research techniques by working on a short research project under the direct supervision of a member of staff. It aims to enable students to identify and think what are the key issues the dental world is facing, how to solve by applying what they have learnt in classroom, and conduct literature search regarding advanced research techniques and related technology under development. It is expected that students are actively engaged in the project, and this course would prepare students for working in specialty of dental materials science.

Assessment: *One written report in format of dissertation of no less than 20000 words*

September 27, 2019