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CURRICULA

24th Curriculum for the University Course in "Endodontology"

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Pursuant to § 25 Para. 1 Z 10 in conjunction with § 56 UG the Senate of the Medical University of Vienna, in its meeting on March 16, 2018, approved the resolution of the Curriculum Board for University Courses dated November 22, 2017, concerning the curriculum for the university course in "Endodontology". The period of validity of the Curriculum is limited to three years. The Curriculum is as follows:

Part I: General

§ 1 Objective

The university course in "Endodontology" represents postgraduate basic and further training for practicing dentists. The course imparts knowledge based on the study of dentistry and specialization in the field of endodontics. In addition to the acquisition of scientific principles, theoretical training and especially practical training under the supervision of experts from the field of endodontics represent the basis of this university course.

§ 2 Qualification Profile

When course participants have successfully completed the university course in "Endodontology" they possess the technical and clinical abilities to perform both simple and difficult evidence-based root canal treatments to the highest standards and administer post-endodontic management. Course participants have a command of anatomy, physiology and pathological conditions of the tooth and dental pulp, and the basics of microbiology; they can radiologically and clinically diagnose pathological conditions of the endodontium and on the basis thereof make a treatment decision, the prognosis of which they can estimate. Under the curriculum, various anesthesia techniques and possible vitality-maintaining measures concerning the dental pulp, principles of emergency medicine, laser safety, forensics and photographic documentation with regard to endodontics, and principles of writing a master thesis. Course participants can conduct independent literature searches for a study, plan an academic paper, and have a command of the simple principles of statistical evaluation options. Course participants can set up a workplace specializing in orthodontic treatments, are proficient in the technique of build-up filling and canal localization, as well as radiological and machine-assisted determination of working length. Furthermore, course participants are able to prepare root canals and

disinfect them with irrigation solutions and medicated fillings. Following successful completion of the curriculum, course participants are proficient in various methods of root canal filling, are able to conduct revision procedures, remove foreign matter from the root canal system, seal perforations, and are proficient in various options of post-endodontic management. Tuition also includes the principles of endodontic deciduous tooth treatment and the management of dental trauma with endodontic involvement, the principles of endo-surgery together with revascularization, and the interaction of endodontics with periodontics and implantology. Tuition covers the principles of endodontically induced tooth discoloration and treatment thereof, use of the laser in endodontic treatment, and the materials

used in endodontics and also the medications most frequently prescribed in endodontics for adults, pregnant women, nursing mothers, and children. Also included in tuition is the documentation of endodontic treatments and the ability to build up a quality management system. The course participants treat patients outside the University Clinic of Dentistry Vienna in the facilities of their own dental occupation in accordance with the criteria learned in the curriculum in order to be able to handle the patient cases required for successful completion of the university course. Those patient cases are discussed and presented within the scope of the modules.

§ 3 Cooperative Agreements

For the purpose of commercial and organizational support the course will be held in collaboration with the University Clinic of Dentistry Vienna (a wholly owned subsidiary of the Medical University of Vienna). More detailed provisions are regulated in a cooperative agreement.

§ 4 Duration and Structure

- (1) The university course in "Endodontology" lasts 4 semesters with a total of 28 semester hours of mandatory courses (427 academic hours), which is equivalent to 70 ECTS credits. Taking the master paper into account (20 ECTS credits) the course accounts for 90 ECTS credit points.
- (2) Some of the theoretical material is available as a correspondence degree course (e.g., e-learning).
- (3) The course is held on an in-service basis, alongside professional work. On four afternoons before the respective modules 1-7 there is the option of e-learning. At those times participants can consult the endodontics specialists tutoring the university course with any questions they may have concerning patient treatment. Courses can also be held during the course-free period.
- (4) Courses are only held in English.

§ 5 Requirements for Enrollment

- (1) The prerequisite for enrollment on the university course in "Endodontology" is the presentation of evidence of:
 - a) A completed course of university study or an equivalent course of study successfully completed at a recognized Austrian or foreign post-secondary education institution, each accounting for at least 300 ECTS credit points in the discipline of Dentistry;
 - b) Registration to practice the profession of dentist at the location of patient treatment because the course participants must treat patients outside the University Clinic of Dentistry Vienna in the facilities of their own dental occupation in accordance with the criteria learned in the curriculum in order to be able to handle the patient cases required for successful completion of the university course;
 - c) Knowledge of English is required (equivalent to Level B2/C1 of GER/CEFR or language examination and decision to be taken by the course director) that will permit the reading of scientific literature and the understanding of subject-specific lectures; also computer knowledge that allows trouble-free use of a teaching and learning platform as well as the use of literature databases;
 - d) At least 2 years of professional experience.

- (2) The application for enrollment must be accompanied by a letter of application and a curriculum vitae.
- (3) Proof of fulfillment of the listed prerequisites will be required from all applicants. The academic course director verifies the suitability of applicants based on the documents presented, especially the letter of application and, if need be, a personal interview.
- (4) Enrollment is only possible before the start of the course. The academic course director specifies the maximum number of course participants per course taking into account the number of university places available.

Exceptional cases concerning enrollment after the start of the course can only be approved by the curriculum director after proposal by the academic course director (course director or, in his or her absence, the deputy course director), inasmuch as evidence of the completion of equivalent syllabuses can be produced.

- (5) According to § 70 (1) in conjunction with § 51 (2) Z 22 UG the participants have to apply for course enrollment as extraordinary students. The enrollment of course participants is decided by the principal after proposal by the academic course director.

Part II: Study and Examination Regulations

§ 6 Course Syllabus

The university course in "Endodontology" is comprised of the following:

Mandatory courses (LV)

	LV type ¹	Academ. hours (aS) ²	Self-study ³	ECTS	Examination procedure
MODULE 1 Principles of Endodontic Treatment	VU	40	95	5	Written and oral performance verification, cooperation
<ul style="list-style-type: none"> • Anatomy and physiology of tooth and pulp / pathological conditions of the pulp (8 aS) • Principles of microbiology / radiology focusing on endodontics (8 aS) • Reporting in endodontics / diagnosis in endodontics (8 aS) • General treatment options in endodontics / general prognosis in endodontics (8 aS) • Anesthesia in endodontics / vitality-maintaining measures concerning the pulp (8 aS) 					

¹ VO = lectures | UE = exercises | PR = practicals | SE = seminars | WA = scientific work
Combined courses: VB = lecture with practical exercises | VS = lecture and seminar | VU = lecture and exercise | SK = seminar with practical | SU = seminar with exercise | PX = practice seminar | PU = practical exercise

² Semester (week) hours (1 SWS = 15 aS): The number of lectures / total number of mandatory courses is indicated in contact hours (presence times). Depending on the duration of a semester (15 weeks) a contact hour means 15 units of academic tuition hours (aS) each lasting 45 minutes.

³ Times for self-study are indicated in real-time hours.

This module deals with the anatomy and physiology of tooth and pulp as well as pathological conditions of the pulp. The module also covers the principles of microbiology. Apart from addressing the topic of radiology focusing on endodontics, reporting and diagnosis in endodontics are also taught. In addition, general treatment options and prognosis in endodontics are discussed. Another focus of the module is anesthesia and vitality-maintaining measures concerning the pulp.

MODULE 2 Writing a master thesis, scientific work, and forensic aspects	VU	32	100	5	Written and oral performance verification, cooperation
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- Emergency medicine / forensics (8 aS)
- Photographic documentation / laser safety (8 aS)
- Scientific principles of preparing a master thesis / study planning (8 aS)
- Literature search / statistical principles (8 aS)

This module deals with emergency medicine and forensics as well as photographic documentation in endodontics. Another key topic of the module is laser safety focusing on endodontics. This module also imparts the scientific principles of preparing a master thesis. It also covers the topic of study planning and literature search. Statistical principles are dealt with as well.

MODULE 3 Practical principles, prep work, and irrigation protocols	VU	48	150	7.5	Written and oral performance verification, cooperation
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LV: VU title "Theory and practice of build-up fillings, root canal prep work, and disinfection" 32 aS

- Relevant pharmacology for endodontics, including pregnant women, nursing mothers, and children / workplace setup in endodontics, together with instrumentology, rubber dam, and introduction to the use of a surgical microscope (8 aS)
- Theory and practice of build-up fillings together with access to the canal system / radiological and electronic determination of working length (8 aS)
- Manual and machine-assisted preparation of root canals (8 aS)
- Disinfection of root canals using irrigation solutions and medicated fillings (8 aS)

LV: VU title "Consolidation of skills in the preparation and irrigation of root canals" 16 aS

- Preparation of root canals with various systems (8 aS)
- Irrigation of root canals with various systems (8 aS)

This module deals with endodontically relevant pharmacy, including pregnant women, nursing mothers, and children. This module also deals with workplace setup focusing on endodontics together with instrumentology, rubber dam, and the use of surgical microscopes. It covers the theory and practice of build-up fillings and access to the canal system. Another focus of the module is radiological and electronic determination of working length. This module also addresses the manual and machine-assisted preparation of root canals as well as the disinfection of root canals using irrigation solutions and medicated fillings.

MODULE 4 Root canal fillings and endodontic materials	VU	32	100	5	Written and oral performance verification, cooperation
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- Use of laser in endodontics (8 aS)
 - Science of endodontic materials / theory of various root canal filling methods (8 aS)
 - Practice of various root canal filling methods / documentation in endodontics (8 aS)
 - Overall root canal treatment from build-up filling to root canal filling (8 aS)
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This module teaches the use of laser in endodontics and the disinfection of root canals using laser. It also deals with endodontic materials as well as the theory and practice of various root canal filling methods. This module also covers documentation focusing on endodontics.

MODULE 5 Revision, perforation sealing, and post-endodontic management	VU	48	150	7.5	Written and oral performance verification, cooperation
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LV: VU title "Revision and perforation sealing" 32 aS

- Case presentation by participants / quality management in endodontics (8 aS)
- Revision treatment / removal of foreign matter (8 aS)
- Case presentation by participants / recording and documentation (8 aS)
- Perforation sealing / post-endodontic management (8 aS)

LV: VU title "Post-endodontic management" 16 aS

- Post-endodontic management (conventional) (8 aS)
 - Post-endodontic management (adhesive) (8 aS)
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This module is concerned with quality management in endodontics. Revision treatment and the removal of foreign matter (fractured instruments, points) are discussed, as well as perforation sealing and post-endodontic management. In this module case presentations are conducted by the participants and patient cases are discussed.

MODULE 6 Deciduous teeth endodontics, traumatology, and endo-surgery	VU	48	150	7.5	Written and oral performance verification, cooperation
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LV: VU title "Theoretical principles of endodontics in pediatric dentistry and traumatology and exercise in root canal treatment" 32 aS

- Deciduous teeth endodontics / traumatology (8 aS)
 - Endo-surgery / endodontics and implantology (8 aS)
 - Revascularization / endodontics and periodontology (8 aS)
 - Root canal treatment from build-up filling to root canal filling (8 aS)
- Practical exercise

LV: VU title "Practical principles of endodontics in pediatric dentistry and traumatology" 16 aS

- Endodontics and pediatric dentistry (8 aS)
 - Endodontics and traumatology (8 aS)
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This module deals with deciduous teeth endodontics, traumatology, and endo-surgery. There is also a focus on the interaction of endodontics, implantology, and periodontology. The module is concerned with regenerative techniques such as revascularization.

MODULE 7 Endodontically induced tooth discoloration and methods of bleaching	VU	32	100	5	Written and oral performance verification, cooperation
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- Case presentation by participants (8 aS)
- Endodontically induced tooth discoloration / bleaching (internal and external) (8 aS)
- Case presentation by participants (8 aS)
- Root canal treatment from build-up filling to root canal filling Practical exercise (8 aS)

This module deals with endodontically induced tooth discoloration and methods of bleaching (internal and external) in endodontics. Another focus of the module is the conducting of root canal treatment. Here everything is covered in training, from build-up filling to post-endodontic management. The module is rounded off by case presentations by participants and a discussion of those patient cases.

Line Element 1 E-learning, discussion of patient cases, patient treatment	PX	112	490	22.5	Written and oral performance verification, cooperation
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- E-learning (Ask the experts) (64 aS)
- Patient cases (48 aS)

This module is all about case presentations by participants. The patient cases are also discussed.

Line Element 2 Scientific work	WA	35	98	5	Written and oral performance verification, cooperation
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This module is concerned with searching for, reading and interpreting papers. In addition the topics of the master theses are addressed.

	Academ. hours	ECTS credits
Modules 1–7 + Line Element 1 + Line Element 2	427	70
Master thesis		20
TOTAL	427	90

§ 7 Practice

- 1) The university course participants shall have an opportunity to conduct patient treatment independently (premises and patient base) outside the university course in order to be able to handle the patient cases required for successful completion of the university course. For successful completion of the university course a total of 10 completed and documented patient cases shall be submitted. Those patient cases shall contain 6 molars, 2 premolars, and 2 anteriors/canines. The patient cases shall be submitted in writing at least 2 months prior to the final examination and include the following items:

Case history (general medicine and dental), symptoms and expectancy of patients, dental status, radiographic status, diagnosis plus differential diagnoses, treatment plan plus prognosis, detailed treatment pathway, checkup(s), and final epicrisis.

Each patient case has to be accompanied by the following x-ray images: diagnosis, determination of working length, filling x-ray, and confirmation x-ray. A rubber dam clamp must be visible, at least on the image of working length determination. It must be possible to evaluate the root apex and the periapical tissue of all roots.

The patient cases required for positive completion of the university course can be presented and discussed during modules 5 and 7 (but do not have to be). Furthermore, those patient cases (including patient cases that are not presented at the final examination or during modules 5 and 7 of the curriculum) can be discussed with tutoring endodontics specialists within the scope of Line Element 1. Participants thus also receive on-site support in treatment of their endodontic patients outside the teaching units.

- 2) **A license to treat patients in Austria is not required if the treatment for patient cases takes place abroad.** Compliance with the legal regulations for independent treatment of patients abroad is the responsibility of the university course participants.

§ 8 Recognition of examinations

On application by the course participant the curriculum director will make a decision concerning the recognition of work completed at university institutions. A maximum of 20% of the ECTS credits of the examinations specified in the curriculum can be recognized.

§ 9 Master thesis

- (1) A master thesis shall be written within the scope of the university course in "Endodontology". Permission to defend the master thesis requires that the examinations in modules 1-7 have been completed.
- (2) The master thesis shall always be written by course participants in the form of an individual thesis. Partner theses and group theses are, however, permissible if the work conducted by the individual course participants can be evaluated separately.
- (3) The topic of the master thesis can be selected from the field of the university course in "Endodontology". The topic of the master thesis shall be decided in agreement with the tutor and

be approved by the academic course director of the university course. Verification of the quality of the topic of the master thesis shall take place in a specific quality circle made up of at least three persons from the academic university staff of the Medical University of Vienna (§ 94 Para. 2 UG) with authorization to teach at a university or an equivalent qualification and is conducted by analogy with the procedure in the diploma course of study in Dentistry (N 203).

- (4) As equivalent evidence for the master thesis, an original scientific paper accepted by a peer-reviewed top-class or standard journal for publication or already published by the same can be presented, provided it was written in the period of participation in the university course. The course participant shall be a senior author and the thesis must be written in English. In addition, the publication for successful recognition as substitute work for the master thesis of the university course in "Endodontology" shall address a topic of the university course and take the form of personal work, with an introduction, objectives, publication, and discussion. Equivalence of the scientific work shall be decided by the academic course director after submission to the quality circle of the University Clinic of Dentistry (QZ).
- (5) Preparation of the written master thesis shall be accompanied and evaluated by a tutor. Course participants shall have a right of nomination depending on the available tutors. Course participants shall search for tutors on their own. Tutors must meet the criteria by analogy with the tutors for diploma theses at the Medical University of Vienna and be approved by the academic course director of the university course.
- (6) For preparation of the master thesis the existing guidelines for writing the diploma thesis of the diploma course of study in Dentistry (N 203) shall apply.
- (7) The master thesis approved by the tutor shall be sent to an external expert for peer review, who conducts an evaluation based on a template. The peer reviewer of the master thesis shall be appointed by the course director and shall meet the criteria for tutoring diploma theses at the Medical University of Vienna.
- (8) If the master thesis is given a negative assessment, § 17a Para. 12 of the 2nd section of the statutes of the Medical University of Vienna, Bulletin of academic year 2003/2004, No. 22, 9th part, as amended ("Statutes"), shall apply.

§ 10 Presence obligation

- (1) Attendance of the modules / courses is obligatory. The amount of justified absences per course may not exceed 20% of the specified presence times. At all events at least 80% of the specified presence times of courses shall be completed.
- (2) If the number of missed hours exceeds the permissible amount per course, the academic course director shall decide, on application in writing by the student, whether the master thesis may be defended, whether the module (the course) has to be repeated, or whether substitute work can be performed.
- (3) Justified absences (e.g., illness, bereavement) from courses can be tolerated to a certain extent (figure for guidance: 20% of total course duration). Relevant evidence of absences shall be produced. If permitted by the topic of the course, in justified isolated cases (e.g., absences of more than 20%) opportunities for repetition and / or substitute work can also be offered. The necessity to produce substitute work or repeat the module (the course) shall be decided by the academic course director in individual isolated cases.

§ 11 Examination regulations

(1) Examinations in the university course of "Endodontology" are comprised of:

- Study-accompanying examinations in the examination subjects
- Master thesis
- Theoretical and practical final board examination (incl. defence of the master thesis)

(2) Study-accompanying examinations:

These aim to establish whether the course participants have gained a thorough overview of the learning objectives. Within the scope of the university course in "Endodontology" the following types of examination shall be used:

1. Course examinations:

These are examinations at the end of a course. They can be held in the form of a final oral or written examination.

Participants shall be informed of the examination method in a suitable manner prior to commencement of the course.

(a) Oral examination:

Oral examinations are held by the examiners in the form of one-to-one interviews or in the form of a presentation.

(b) Written examinations:

In the case of written examinations the examination questions shall be answered in writing.

2. Courses of an inherent examination nature:

Assessment in the case of courses of an inherent examination nature does not take place on the basis of an individual examination action at the end of the course but on the basis of regular written (e.g., seminar paper) and / or oral contributions (e.g., oral presentation) by participants, continuous monitoring / verification of the prescribed presence obligation.

The examiner in study-accompanying examinations is usually the lecturer whose course the course participant has attended.

(3) Defence of the master thesis:

The master thesis shall be defended within the scope of a public examination before the board of examiners. The prerequisites for participating in defence of the master thesis are as follows:

- Attendance of all the modules of the university course (at least 80% presence)
- Positive completion of all study-accompanying examinations
- Positive assessment of the master thesis

(4) At the end of the university course in "Endodontology" there will be a final board examination that covers the following content:

- Scientific discussion
- Demonstration of a research design followed by implementation

- Verification of the knowledge of scientific literature
 - Knowledge of the theoretical and practical content of the curriculum and the scientific literature recommended in the courses
- (5) The examination board shall be made up of three scientifically suitable members. The members of the examination board shall be appointed from the academic course staff, whereby at least one person shall hold authorization to teach at a university (§§ 102ff UG) or an equivalent qualification and be an employee of the Medical University. One member shall be appointed as chair of the examination board. The resolutions of the examination board shall be passed by a majority of votes. The curriculum director can also be called in to (final) board examinations as an examiner.
- (6) Non-attendance of an examination:
If examination candidates are prevented from attending an examination by illness or another reason worthy of consideration and if they have announced that fact in writing or orally in good time, the relevant examinations shall be repeated as soon as possible.
- (7) The examination procedure shall conform to §§ 72ff UG and the relevant provisions (§§ 14 ff) of the 2nd section of the Statutes of the Medical University of Vienna.

§ 12 Methods of grade allocation

- (1) Assessment shall conform to §§ 72 ff UG and the relevant provisions (§§ 14 ff) of the 2nd section of the Statutes of the Medical University of Vienna.
- (2) Positive completion of the course shall be assessed in the form of an overall grade. The overall grade shall be a "pass" if all the examinations prescribed in this curriculum have received a positive assessment and the overall assessment shall be "with distinction" if in none of the subjects the assessment was worse than "good" and in at least half of the subjects the assessment given was "very good".
- (3) The overall grade is made up of
- Study-accompanying examinations
 - Master thesis
 - Defence of the master thesis
 - Final board examination

§ 13 Premature termination

Training shall be deemed to have been discontinued if the course participant is absent from more than 20% of the (tuition) hours per course / module without any excuse. In the event of excused absence for more than 20% of the (tuition) hours the course participant shall attend the theoretical training at a later date, depending on what is being offered and the available places.

§ 14 Completion and academic degree

- (1) The university course in "Endodontology" has been completed successfully if all the prescribed examinations and the master thesis have received a positive assessment in accordance with the examination regulations.
- (2) Successful completion of the university course shall be evidenced by means of a final certificate and the academic degree of "Master in Clinical Dentistry in Endodontology" – abbreviated to "MClinDent (Endodontology)" – shall be awarded in the form of notification by the Medical University of Vienna.
- (3) The final certificate shall list the individual modules and the courses assigned to them along with their total number of hours and their individual grades. Courses where the success of participation was evaluated as "successfully attended / unsuccessfully attended" shall be listed in addition. The topic and the overall grade of the written master thesis shall also be indicated. The final certificate must show the ECTS-credit points.

§ 15 Effective date

This curriculum shall enter into force on the first day of the month that follows its official announcement.

Michael Gnant
Chair of the Senate