Course: Cariesology
Course Coordinator: Prof. Alen Braut, PhD, DMD
Department: Endodontics and restorative dentistry
Study program: Integrated Undergraduate and Graduate University Study of Dental Medicine
Study year: 3rd
Academic year: 2022 / 2023.

SYLLABUS

Course description (a brief description of the course, general instructions, where and in what form the lessons are organized, necessary equipment, instructions for attendance and preparation for classes, student obligations, etc.):

> The aim of the course is to train students to diagnose and set a treatment plan for initial dental carious lesions, as well as to acquire knowledge about the complex interaction of factors in the development of dental caries. The objectives of the course are to learn how to clinically recognize the initial and also the advanced carious lesions of the teeth and to improve the use of modern diagnostic procedures in the prevention of dental caries.

Assigned reading:

> GJ Mount, WR Hume, HC Ngo, MS Wolff. Preservation and Restoration of Tooth Structure. 3rd Ed. Willey Blackwell. 2016.

Optional/additional reading:

> Dental Caries: The Disease and its Clinical Management by Ole Fejerskov (Editor), Bente Nyvad (Editor), Edwina Kidd (Editor) (8-May-2015).

COURSE TEACHING PLAN:

The list of lectures (with topics and descriptions):

> L1. Development of teeth and origin of formative tissues
> Learning outcomes:
> • describe and explain the aim of the Dental Caries course
> • describe development of teeth and surrounding tissues
>
> L2. Morphological and structural irregularities of hard dental tissues.
> Learning outcomes:
> • define physiological and pathological forms of tooth development
> • explain the origin of certain structural and morphological irregularities of the teeth
>
> L3. Theories about the occurrence of caries. Epidemiology of caries.
> Learning outcomes:
> • describe historical theories about the occurrence of caries
> • explain the scientific basis of certain theories about the occurrence of caries
> • describe and explain the ways of recording caries prevalence in the world
> • name the modern theory of dental caries

L4. Etiology and definition of dental caries, clinical picture and clinical classification.
Learning outcomes:
• define the causes of dental caries
• explain the consequences of tooth decay and the clinical appearance of affected teeth
• define the clinical classification of caries

L5. Caries as a specific microbial infection
Learning outcomes:
• define the microbes that cause dental caries
• explain the mechanisms of action of microorganisms on dental tissues

L6. Pathohistological picture of caries and pathohistological classification
Learning outcomes:
• define the pathohistological layers of dental caries
• define the pathohistological classification of dental caries
• describe the composition of the carious lesion layers of enamel and dentin

L7. Diagnostics of dental caries.
Learning outcomes:
• define the possibilities of diagnostic procedures in caries detection
• explain the mechanisms of diagnosing carious lesions
• explain the cooperation of specialists in dental pathology with various specialties of dental medicine

L8. Dento-bacterial plaque: formation, composition and structure
Learning outcomes:
• describe the mechanisms of dental plaque formation
• name end explain the structure and composition of dental plaque

L9. Chemical events in enamel and dentin during the carious process.
Learning outcomes:
• explain the chemical processes during the formation of a carious lesion
• define the stages of carious lesion formation
• define the differences between enamel caries and dentin caries

L10. Assessment of the risk of caries.
Learning outcomes:
• define the degrees of risk of carious lesions
• define the factors of occurrence and their role in assessing the risk of new caries or the progression of an existing caries

L11. Prevention of dental caries (biochemical approach).
Learning outcomes:
• define the procedures of the non-operative approach to the prevention of dental caries
• describe and explain the mechanisms of action of preventive procedures

L12. Caries prevention (clinical approach)
Learning outcomes:
• define procedures for the operative approach to the prevention of dental caries
• describe and explain the advantages and disadvantages of operational preventive procedures

The list of seminars with descriptions:

S1. Histopathological image of caries
Learning outcomes:
• describe the caries layers of dentin and enamel

S2. The role of dentobacterial plaque in the development of caries and its control.
Learning outcomes:
• explain the role of dentobacterial plaque in the development of caries
• list the measures to control dentobacterial plaque

S3. Clinical diagnosis of caries
Learning outcomes:
• name the clinical procedures for the diagnosis of dental caries
• explain the working methods of clinical diagnostic procedures

S4. Meaning and application of epidemiological results
Learning outcomes:
• calculate epidemiological indices
• describe the occurrence of caries in the world

S5. Risk factors for caries.
Learning outcomes:
• define the factors for the occurrence of caries
• connect the interplay of factors in the development of dental caries

S6. Data collection methodology for epidemiological analysis
Learning outcomes:
• describe the methodology of data collection on dental caries
• explain the importance of precise data collection methodology

S7. Implementation of Epidemiological analysis and interpretation of results
Learning outcomes:
• explain the methods of implementing the analysis of the obtained data
• explain the significance of the obtained results of the epidemiological analysis

S8. Modern methods of controlling dental caries
Learning outcomes:
• define the methods of controlling dental caries and the influence on the factors of its occurrence
• explain the selection of a particular method of dental caries prevention

The list of practicals with descriptions:

The practicals will be performed at the Faculty of Dental Medicine and Clinic for Dental Medicine of the Rijeka Clinical Hospital Center. Before accessing individual exercises in small groups, students are required to acquire and demonstrate theoretical knowledge that they will perform practically initially with each other and later on patients. During the exercises, students will acquire the knowledge and skills necessary to detect initial and clinical caries lesions and establish a plan for preventive procedures therapy.

Students' obligations:

Students are obliged to regularly attend, actively participate and complete assignments in all forms of teaching.

Assessment (exams, description of written / oral / practical exam, the scoring criteria):

Student assessment is carried out in accordance with the current University of Rijeka Study Regulations.

Students are graded using the ECTS (A-F) and numerical system (1-5). Grading in the ECTS system is carried out by absolute distribution.

During the semester and the final exam, students will be able to collect a maximum of 100 grade points (a maximum of 50 grade points during the semester and a maximum of 50 grade points during the final exam).

During the semester, a student can collect a maximum of 50 grade points (table 1).

Of these, 20 in the colloquium, 10 in the seminar work, 20 during the practicals with continuous verification of theoretical and practical knowledge.

	Evaluation	Maximal grade points
colloquium		2x10
Practicals	Continuous assesment	20
Seminars	Food diary	10
Total		50

Mandatory colloquium (up to 20 points)
During classes, all students are required to take a written colloquium from the given program, where they earn a maximum of 25 points. The colloquium is held in the lecture hall at Krešimirova 42.
Seminars (up to 10 points) - food diary
Students are obliged to actively participate during the seminar.

Preclinical exercises (20 points)
During the pre-clinical exercises, the student is obliged to practically work out all the given topics in the exercises.

Evaluation of preclinical exercises:
Continuous verification of theoretical and practical knowledge in exercises. The average grade is taken in the following way:

Average grade on practicals (A-C)	Average grade on practicals (5-1)	Total average grade on practicals	Grade points
A	5	4,5- 5	20
A/B	4	3,5- 4,49	17
B	3	2,50- 3,49	13

B/C	2	2- 2,49	10
C	1	0- 1,99	0

If a student, excused or unjustified, misses more than 30% of classes, he cannot continue following the course and loses the opportunity to take the final exam. With this, he collected 0 ECTS points and was graded F.

Evaluation of the final exam with 50 marks

The final exam is a written test containing 30 questions. Of these, 45 questions are based on the principle of rounding one or more correct answers (incorrect answers do not carry negative points), and 5 questions are descriptive.

Formation of the final grade:

The grades obtained during the semester are joined by the points obtained on the final exam. Based on the total sum of points, students are evaluated as follows:

A (5) – 90-100 grade points
B (4) – 75-89.9 grade points
C (3) – 60-74.9 grade points
D (2) – 50-59.9 grade points
F (1) – 0-49.9 grade points

The numerical evaluation system is compared with the ECTS system as follows: A - excellent (5), B - very good (4), C - good (3), D - sufficient (2), F - insufficient (1).

Passing the CARIESOLOGY exam is a REQUIREMENT for admission to the College of RESTORATIVE DENTAL MEDICINE.

Other important information regarding to the course:

Retaking the course:

In case of re-enrolling the course the students have the same responsibilities as the first time attendees and are obliged to regularly attend, actively participate and complete assignments in all forms of teaching.

COURSE SCHEDULE (for academic year 2022/23)
30.1.-3.2. Cariesology

Date	Lectures (time)	Seminars	Practicals	Instructor
30.1.2023.	L1 (8.00-8.45)			Prof. Alen Braut, PhD, DMD
	L2 (8.45-9.30)			Prof. Alen Braut, PhD, DMD
	L3 (9.30-10.15)			Prof. Alen Braut, PhD, DMD

	L4 (10.15-11.00)			Prof. Alen Braut, PhD, DMD
	Pause			
	L5 (11.30-12.15)			Prof. Alen Braut, PhD, DMD
	L6 (12.15-13.00)			Prof. Alen Braut, PhD, DMD
	L7 (13.00-13.45)			Prof. Alen Braut, PhD, DMD
	L8 (13.45-14.30)			Prof. Alen Braut, PhD, DMD
1.02.2023.		S1 (8.00-8.45)		D.Šnjarić, PhD, DMD
			P1 (8.00-8.45)	E. Božac DMD D.Šnjarić, PhD, DMD
		S2 (8.45-9.30)		J. Vidas Hrstić, PhD, DMD
			P2 (8.45-9.30)	E. Božac DMD D.Šnjarić, PhD, DMD
		S3 (10.15-11.00)		D.Šnjarić, PhD, DMD
			P3 (10.15-11.00)	E. Božac DMD D.Šnjarić, PhD, DMD
	L9 (11.30-12.15)			Prof. Alen Braut, PhD, DMD
	L10 (12.15-13.00)			Prof. Alen Braut, PhD, DMD
	L11 (13.00-13.45)			Prof. Alen Braut, PhD, DMD
	L12 (13.45-14.30)			Prof. Alen Braut, PhD, DMD
2.02.2023.		S4 (8.00-8.45)		D.Šnjarić, PhD, DMD
			P4 (8.00-8.45)	J. Vidas Hrstić, PhD, DMD E. Paljević, DMD
		S5 (8.45-9.30)		J. Vidas Hrstić, PhD, DMD
			P5 (8.45-9.30)	E. Paljević, DMD J. Vidas Hrstić, PhD, DMD
		S6 (9.30-10.15)		D.Šnjarić, PhD, DMD
			P6 (9.30-10.15)	E. Paljević, DMD J. Vidas Hrstić, PhD, DMD
		S7 (10.15-11.00)		D.Šnjarić, PhD, DMD
			P7 (10.15-11.00)	E. Paljević, DMD J. Vidas Hrstić, PhD, DMD
	Colloquium (11.30-12.15)			
3.02.2023.		S8 (8.00-8.45)		D.Šnjarić, PhD, DMD
			P8 (8.00-8.45)	E. Paljević, DMD J. Vidas Hrstić, PhD, DMD
			P9 (8.45-9.30)	E. Paljević, DMD J. Vidas Hrstić, PhD
			P10 (9.30-10.15)	E. Paljević, DMD

				J. Vidas Hrstić, PhD
6.02.2023.	FINAL exam (8.00-8.45)			

List of lectures, seminars and practicals:

	LECTURES (Topics)	Teaching hours	Location/Lecture room
L1	Development of teeth and origin of formative tissues	1	Kresimirova 42
L2	Morphological and structural irregularities of hard dental tissues	1	Kresimirova 42
L3	Theories about the occurrence of caries. Epidemiology of caries.	1	Kresimirova 42
L4	Etiology and definition of dental caries, clinical picture and clinical classification.	1	Kresimirova 42
L5	Caries as a specific microbial infection	1	Kresimirova 42
L6	Pathohistological picture of caries and pathohistological classification	1	Kresimirova 42
L7	Diagnostics of dental caries	1	Kresimirova 42
L8	Dento-bacterial plaque: formation, composition and structure	1	Kresimirova 42
L9	Chemical events in enamel and dentin during the carious process.	1	Kresimirova 42
L10	Assessment of the risk of caries.	1	Kresimirova 42
L11	Prevention of dental caries. (biochemical approach).	1	Kresimirova 42
L12	Caries prevention. (clinical approach)	1	Kresimirova 42
	TOTAL TEACHING HOURS	12	

	SEMINARS (Topics)	Teaching hours	Location/Lecture room
S1	Histopathological image of caries	1	Kresimirova 42
S2	The role of dentobacterial plaque in the development of caries and its control.	1	Kresimirova 42
S3	Clinical diagnosis of caries	1	Kresimirova 42
S4	Meaning and application of epidemiological results	1	Kresimirova 42
S5	Risk factors for caries.	1	Kresimirova 42
S6	Data collection methodology for epidemiological analysis	1	Kresimirova 42
S7	Implementation of Epidemiological analysis and interpretation of results	1	Kresimirova 42
S8	Modern methods of controlling dental caries	1	Kresimirova 42
	TOTAL TEACHING HOURS	8	

	PRACTICALS (Topics)	Teaching hours	Location/Lecture room
P1	Sampling for inoculation and microbiological analysis of planktonic and dentobacterial plaque bacteria.	1	Kresimirova 42

P2	Analysis of the results of planktonic and dentobacterial plaque bacteria	1	Kresimirova 42
P3	Clinical diagnosis of caries in student groups	1	Kresimirova 42
P4	Clinical diagnosis of caries in student groups	1	Kresimirova 42
P5	Clinical diagnosis of caries in student groups	1	Kresimirova 42
P6	Clinical diagnosis of caries in student groups	1	Kresimirova 42
P7	Clinical diagnosis of caries in KBC Ri patients.	1	Kresimirova 42
P8	Clinical diagnosis of caries in KBC Ri patients	1	Kresimirova 42
P9	Survey on eating habits and advice on nutrition	1	Kresimirova 42
P10	Determining caries risk and creating a therapy plan by computer analysis of the collected data.	1	Kresimirova 42
	TOTAL TEACHING HOURS	10	

	FINAL EXAM DATES
1.	6.02.2023.
2.	20.02.2023.
3.	2.06.2023.