



Women Dental College, Abbottabad

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STUDY GUIDE BDS 1st Year Department of Oral Biology

Description:

Oral Biology and Tooth Morphology is a Basic Dental Sciences course taught during first-year BDS.

The subject deals with the development, gross and histological structure, functions and interactions of oral and craniofacial tissues. It is aimed at introducing the students to the normal structures and functions of the oral cavity as well as to be able to recognize the developmental anomalies that often occur. This is the bridging course between basic medical sciences and clinical dentistry.

Overview:

The subject of Oral Biology and Tooth Morphology includes the following main topics taught in collaboration with Anatomy and Physiology Departments.

- Oral and Developmental Histology
- Tooth Morphology and Occlusion
- Oral Physiology
- General and Orofacial Embryology
- Oral Anatomy

Program	Bachelor of Dental Surgery
Course Name	Oral Biology
Contact Hours	290 hours
Infrastructure Requirements	Lecture Hall Histology Lab Museum



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Faculty Responsible for Course Conduction:

Sr. No	Faculty	Designation
1	Dr. Talib Hussain	Professor
2.	Dr. Shahwar Siddique	Senior Lecturer
3.	Dr. Raima Bilal	Demonstrator
4.	Dr. Amna Khan	Demonstrator

Details of Supporting Staff:

Sr. No	Staff	Designation
1.	Mr. Saqib Islam	Lab Attendant

Objectives & Learning Strategies/TOS:

S No.	Topic	Learning Outcomes	Teaching Hours	Mode of Teaching	Assessment Tools
		At the end of the year, graduates are expected to;			
1.	Oral Anatomy	<ul style="list-style-type: none">➤ Illustrate the terms related to gross anatomy of different structures i.e. muscles, bones, salivary glands.➤ Explain the muscles involved in facial expression and	01 01	LGF LGF	01 MCQ 01 MCQ 01 SEQ



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		<p>mastication with its origin and insertion.</p> <ul style="list-style-type: none"> ➤ Elaborate the biomechanics of Tempor-o-mandibular joint. Also comprehend the knowledge of muscles in craniofacial region with its nerve supply and blood supply. 	02	SGD	02 MCQs	
2.	Oral Embryology	<ul style="list-style-type: none"> ➤ Illustrate the terms related to embryology. 	01	LGF	01 MCQ	
		<ul style="list-style-type: none"> ➤ Assess the different stages during development of embryo. 	02	LGF		
		<ul style="list-style-type: none"> ➤ Assess the development of head and neck from different pharyngeal arches. 	02	LGF		
		<ul style="list-style-type: none"> ➤ Compose the embryological development of different structures of head and neck. 	02	SGD		
		<ul style="list-style-type: none"> ➤ Interpret the anomalies of head and neck to the development of embryo. 	01	LGF		
		<ul style="list-style-type: none"> ➤ Express the knowledge about development of tooth and root. 	04	LGF		01 MCQ 01 SEQ
		<ul style="list-style-type: none"> ➤ Identify the anomalies of the developmental stages of development. 	02	LGF		01 MCQ
3.	Oral Histology	ENAMEL				
		<ul style="list-style-type: none"> ➤ Define enamel and indicate the Properties, 	01	LGF		



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		<p>composition and types of contents of enamel.</p> <ul style="list-style-type: none"> ➤ Distinguish the histological microscopic appearance and formulate the histological diagrams ➤ Mark the changes that occur in the above structures with age. ➤ Analyze the common clinical features. 	02	SGD	Enamel= 04 MCQs 01 SEQ
		<p>DENTINE</p> <ul style="list-style-type: none"> ➤ Define dentine and express the composition and types of dentine. ➤ Identify the histological microscopic appearance and formulate the histological diagrams. ➤ Assess the changes that occur in the above structures with age. ➤ Isolate the common clinical features. 	01	LGF	
		<p>DENTINE</p> <ul style="list-style-type: none"> ➤ Define dentine and express the composition and types of dentine. ➤ Identify the histological microscopic appearance and formulate the histological diagrams. ➤ Assess the changes that occur in the above structures with age. ➤ Isolate the common clinical features. 	01	LGF	
		<p>DENTINE</p> <ul style="list-style-type: none"> ➤ Define dentine and express the composition and types of dentine. ➤ Identify the histological microscopic appearance and formulate the histological diagrams. ➤ Assess the changes that occur in the above structures with age. ➤ Isolate the common clinical features. 	02	SGD	Dentin= 04 MCQs 0.5 SEQ
		<p>DENTINE</p> <ul style="list-style-type: none"> ➤ Define dentine and express the composition and types of dentine. ➤ Identify the histological microscopic appearance and formulate the histological diagrams. ➤ Assess the changes that occur in the above structures with age. ➤ Isolate the common clinical features. 	01	LGF	
		<p>CEMENTUM</p> <ul style="list-style-type: none"> ➤ Define Cementum and describe the composition and types of Cementum. ➤ Identify the histological microscopic appearance and formulate the histological diagrams. 	01	LGF	
		<p>CEMENTUM</p> <ul style="list-style-type: none"> ➤ Define Cementum and describe the composition and types of Cementum. ➤ Identify the histological microscopic appearance and formulate the histological diagrams. 	02	SGD	Cementum= 02 MCQs 0.5 SEQ



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	<ul style="list-style-type: none"> ➤ Detect the changes that occur in the above structures with age. ➤ Analyze the common clinical features. 	01	LGF	
	<p>PULP</p> <ul style="list-style-type: none"> ➤ Define pulp and describe its volume and cells of pulp along with their functions. ➤ Correlate its clinical implications. ➤ Express its age changes. 	02	LGF	Pulp= 02 MCQs 0.5 SEQ
	<p>PERIODONTAL LIGAMENT</p> <ul style="list-style-type: none"> ➤ Define periodontal ligament and illustrate its cells and their functions. ➤ Identify the histological appearance of the structures of periodontium. ➤ Assess the clinical importance of PDL and associated common pathological conditions. 	01	LGF	
	<p>ALVEOLAR BONE</p> <ul style="list-style-type: none"> ➤ Describe the composition of bone and illustrate the classification and main structural features of bone. ➤ Isolate the various types of cells of bone 	02	SGD	PDL= 02 MCQs 0.5 SEQ
		01	LGF	



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		<p>and understand how their structure and functions.</p> <ul style="list-style-type: none"> ➤ Formulate the principles that regulate bone formation and bone resorption. ➤ Assess the clinical importance of alveolar bone in oral cavity. 	02	LGF	Alveolar bone= 02 MCQs 0.5 SEQ
			01	LGF	
			01	LGF	
		<p>ORAL MUCOSA</p> <ul style="list-style-type: none"> ➤ Classify the types of oral mucosa and enlist their functions. ➤ Differentiate its epithelium according to its location. ➤ Asses the microscopic appearance of different layers of oral mucosa and formulate its histological labeled diagram. ➤ Isolate the origin of junctional epithelium and its unique characteristics. 			Oral Mucosa= 04 MCQs 0.5 SEQ
			01	LGF	
			02	LGF	
			02	LGF	
		<p>SALIVARY GLANDS</p> <ul style="list-style-type: none"> ➤ Classify the salivary glands and illustrate the structure of ductal system of Salivary gland. ➤ Describe the functions and composition of saliva. ➤ Express the knowledge about salivary cells. 			
			01	LGF	
			02	LGF	



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		<ul style="list-style-type: none"> ➤ Discuss the mechanism of salivation. 	01	LGF	Salivary Glands= 02 MCQs 0.5 SEQ
			01	LGF	
4.	Oral Physiology	<ul style="list-style-type: none"> ➤ Define terms related to physiological processes of mastication, Taste, swallowing. ➤ Express the process of eruption and shedding of teeth. ➤ Describe the process of mechanism of taste and illustrate the structure of tongue. 	01	LGF	05 MCQs 01 SEQ
			02	LGF	
			01	LGF	
5.	Tooth Morphology & occlusion	<ul style="list-style-type: none"> ➤ Define different terminologies of basic morphology. ➤ Describe different surfaces of teeth. ➤ Demonstrate different anatomical landmarks on teeth models. ➤ Differentiate teeth from each other by illustrating the features of individual tooth ➤ Formulate different surfaces of teeth. 	01	LGF	12 MCQs 04 SEQs
			02	SGD	
			02	SGD	
			02 / tooth= 2 x 16 = 32 hours	SGD	
			01 / tooth= 1 x 16 = 16 hours	SGD	
6.	Laboratory work	<ul style="list-style-type: none"> ➤ Identify different histological structures of oral cavity under 	02/ Structure	SGD	



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		microscope.			

Learning Resources:

Sr. No	Text/ Reference Books	Edition
1.	Orban's Oral Biology and Histology	14 th edition
2.	Ten Cate's Oral Histology: Development, Structure, and Function	9 th Edition
3.	Concise Dental anatomy and Morphology by James L. Fuller	5 th Edition
4.	G.R. and Moxham, B.J., 2009. Oral anatomy, Histology and Embryology. Mosby. 4 th international edition, 4.	4 th Edition
5.	Wheeler's Dental Anatomy, Physiology and Occlusion	11 th Edition

Additional Learning Resources:

Hands on	Students will be involved in practical session and hands activities to enhance learning: <ul style="list-style-type: none"> ➤ Histologic slides under Microscope. ➤ Hands on plaster models of individual tooth. ➤ Dental camps for the interpretation of primary and secondary dentition surveys.
Skills Lab	Utilize the lab to relate knowledge to specimens and models available: <ul style="list-style-type: none"> ➤ Typodont. ➤ Skulls. ➤ Tempor o mandibular joint models.
Videos	Animated learning videos of developmental histology to clear the concepts of the students shown during interactive lecture sessions.
Internet Resources	To increase the knowledge, students should utilize the available internet resources like: <ul style="list-style-type: none"> ➤ Wmc ims ➤ Wmc Library LMS. ➤ CDs/DVDs in IT lab



Assessment Methods:

MCQs:

Multiple Choice questions; Single best Type.

OSPE/OSCE: Objective Structured Practical/Clinical Examination

Presentation:

Multiple Choice Questions:

1. Single best type **MCQs having five options** with one correct answer and four distractors are part of assessment.
2. Correct answer carries **01 mark**, and incorrect will be marked zero. Rule of negative marking is not applicable.
3. Students mark their responses on specified computer-based designed response sheet.

Objective Structured Practical/Clinical Examination

1. **09 OSCE stations** are used for formative as well as summative assessment.
2. Time allocated for each station is **05 minutes** as per Examination rules of Khyber Medical University, Peshawar.
3. All students are rotated through the same stations.
4. Stations used are **unobserved, observed, interactive, and rest stations**.
5. On unobserved stations, models, lab reports, radiographs, flowcharts, case scenarios may be used to assess cognitive domain.
6. On observed station, examiners don't interact with candidate and just observe the performance of skills /procedures.
7. On interactive station, examiner ask questions related to the task within the allocated time.
8. On rest station, students are not given any task. They just wait to move to the next station.



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Presentation:

Students are given topics for presentation either individually or in groups. They are encouraged to prepare presentations on power point to enhance their understanding of the topic.

Internal Assessment Criteria:

1. **10%** weightage of **Internal Assessment** in professional exam is policy of Khyber Medical University.
2. This Internal Assessment will comprise of following components
 - a) Attendance
 - b) Class behavior
 - c) Monthly tests
 - d) Midterms
 - e) Sendup exam
 - f) Class presentations.

Examination Rules & Regulations:

1. One class test of the subject may be held monthly, marks of which will be included in internal assessment. Marks for class test can vary according to syllabus and teachers' choice.
2. Mid-Term exam comprising **45 MCQs** of single best type and **45 marks SEQs** will be held in the middle of the session.
3. Sendup Exam comprising **45 MCQs** of single best type and **45 marks SEQs** will be conducted at the end of session before prep leaves.
4. The pattern of class tests, Mid-term & Pre-prof will be same as the Professional Exam taken by Khyber Medical University, Peshawar.
5. OSPEs will be conducted at the end of Mid-term & Sendup Exam.



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Feedback on Examination:

1. Students' feedback on assessment strategies will be taken in a preformed proforma for feedback twice a year i.e. Mid-term and pre-prof exams.
2. Feedback of theory as well as OSPE & Viva will be taken.
3. Department of Medical Education & Quality Enhancement Cell in collaboration with Exam Cell of WDC is responsible to conduct this exercise.

Model Questions:

Multiple Choice Question

Question:

A 12 years old patient present to the dental clinic with esthetic concerns regarding his Maxillary Central Incisors. On examination enamel is found to be of normal thickness but chips off easily by applying pressure with a blunt instrument. This defect of enamel most probably occurs during which stage of Amelogenesis?

- a. Histodifferentiation phase.
- b. Maturation phase.
- c. Secretory phase.
- d. Transition phase.
- e. Morphodifferentiation phase.

KEY:

Option b: Maturation phase.



Short Answer Question:

Question:

Classify the types of Dentin.

Answer:

Based on time of Formation:

- Primary dentin
 - a. Mantle dentin
 - b. Circumpulpal dentin

- Secondary dentin

Based on Response/ Tertiary dentin:

- Reactionary dentin
- Reparative dentin
- Sclerotic dentin

Based on relation to Dentinal tubules:

- Peritubular / intratubular dentin
- Intertubular dentin

Other types of dentin:

- Predentine
- Interglobular dentin

Suggestions for Next Academic Year:

- MCQs and SEQs bank of University past papers should be provided to the students.

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- Dr. Rayma Bilal
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