

MODULE 4

CERVICO-FACIAL MODULE

1st Year BDS

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Vision & Mission

Khyber Medical University (KMU) Vision:

Khyber Medical University will be the global leader in health sciences academics and research for efficient and compassionate health care.

Khyber Medical University (KMU) Mission:

Khyber Medical University aims to promote professional competence through learning and innovation for providing comprehensive quality health care to the nation.

Institute of Health Professions Education & Research (IHPER) Mission:

To produce leaders, innovators and researchers in health professions education who can apply global knowledge to resolve local issues.

Themes

S#	Theme	Duration in Weeks/days
1.	Neck Pain	3 days (18hrs)
2.	Neck Swelling	3 days (22hrs)
3.	Earache & Imbalance	2 days (10hrs)
4.	Difficulty in Chewing	1 week (29hrs)
Total		3 weeks (79 hrs)

Teaching Hours Allocation

S. No	Subject	Hours
1.	Anatomy	42
2.	Physiology	9
3.	Oral Biology & Tooth Morphology	21
4.	Orthodontics	2
5.	Biochemistry	2
6.	Oral Maxillofacial	2
7.	General Medicine	1
Total		79

Learning Objectives

By the end of this Module, 1styear BDS students will be able to:

- 1. Identify the anatomical structures of the neck.
- 2. Discuss the development, histology, structure, and common diseases associated with thyroid and parathyroid gland.
- 3. Describe the development, histology, structure, and function of ear.
- 4. Discuss the structure, function, and diseases of the muscles, joints, and other tissues involved in mastication.
- 5. Define occlusion and malocclusion.
- 6. Discuss the structure and features of mandibular pre-molars and molars.
- 7. Classify impression materials and demonstrate manipulation of impression materials.
- 8. Discuss the classification, structure, function, biochemical properties, pathology, and management of salivary glands.
- 9. Discuss the histology, structure, biochemical properties, and function of cervical spine.

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Theme 1: Neck Pain				
Subject	Торіс	Hours	Learning Objective	
Gross Anatomy	Hyoid Bone	1hr	1. Describe the structure of the hyoid bone.	
			2. Describe muscle attachments of hyoid bone.	
			3. Explain the clinical implications.	
	Anterior Triangle of	2hrs	4. Describe superficial fascia and deep fascia.	
	Neck		5. Enlist subdivisions of anterior triangle of neck	
			a. Submental Triangle	
			b. Digastric triangle	
			c. Carotid Triangle	
			d. Muscular Triangle	
			6. Describe boundaries of anterior triangle of neck.	
			7. Describe content of anterior triangle of neck.	
			8. Describe boundaries of carotid triangle of neck.	
			9. Describe content of carotid triangle of neck.	
			10. Describe boundaries of muscular triangle.	
			11. Enlist contents of muscular triangle.	
			12. Describe attachments, nerve supply and actions of infrahyoid muscles.	
			13. Enumerate clinical problems related to anterior neck region.	
	Posterior Triangle	1hr	14. Describe boundaries of posterior triangle.	
			15. Enlist divisions of posterior triangle.	
			16. Explain contents of posterior triangle.	
			17. Discuss swelling of supraclavicular lymph nodes.	
	Pharynx	1hr	18. Describe boundaries of pharynx.	

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		19. Enlist parts of pharynx and compare them.
		20. Describe structure of pharynx.
		21. Describe structures passing between phyrangeal muscles.
		22. Describe origin, insertion of constrictors of pharynx.
		23. Explain Waldeyer's lymphatic ring.
Pharyngeal Spaces	1hr	24. Explain types of phyrangeal spaces.
Lyranx	2hrs	25. Describe gross features of larynx, cartilages membranes and muscles.
		26. Enlist muscles which cause movement of larynx.
		27. Describe movements of vocal cords.
		28. Describe blood supply of vocal cords.
		29. Describe nerve supply of vocal cords.
		30. Describe lymphatic drainage of vocal cords.
		31. Enumerate clinical problems (e.g., tumors of vocal cords, damage to
		external lyrangeal nerve, damage to recurrent lyrangeal nerve etc.)
Cervical Fascia	1hr	32. Describe skin, superficial fascia and deep cervical fascia.
		33. Discuss attachments of deep cervical fascia and pharyngeal spaces.
Common Carotid	2hrs	34. Describe parts of common carotid artery i.e., carotid sinus, carotid body.
Artery and its		35. Describe course and relation of ECA.
branches		36. Explain branches of ECA.
		37. Describe parts of ICA with reference to relations.
Subclavian,	2hrs	38. Describe course of subclavian vein.
Internal Jugular,		39. Describe course and relations of IJV.
Vein		40. Describe different parts of Brachiocephalic vein.

	Lymphatic Drainage	1hr	41. Explain role of superficial and deep group of lymph nodes in drainage of
			head and neck.
	Cervical Vertebrae	2hrs	42. Describe attachments of Cervical vertebrae.
			43. Enumerate clinical problems of cervical vertebrae (e.g., cervical
			spondylosis, fracture of cervical vertebrae etc.)
	Cervical Plexus	1hr	45. Enlist branches of cervical plexus.
	Brachial Plexus	1hr	46. Describe the formation of brachial plexus.
			47. Enlist the branches of brachial plexus.
			Theme 2: Neck Swelling
Gross Anatomy	Thyroid	1hr	48. Describe location and extent of thyroid gland.
			49. Briefly explain capsules of thyroid.
			50. Explain parts and relations of thyroid gland.
			51. Describe blood supply of thyroid gland.
			52. Describe nerve supply of thyroid gland.
			53. Describe lymphatics of thyroid gland.
Neuroanatomy	Vagus Nerve and	1hr	54. Explain the origin, course, branches, and the divisions of the vagus
	Ansa Cervicalis		nerve.
			55. Describe Ansa cervicalis.
	Cervical Part of Sympathetic Trunk:	1hr	56. Describe features and relations of Cervical part of sympathetic trunk.

			57. Discuss features, location, and branches of:
			a. Superior cervical ganglion
			b. Middle cervical ganglion
			c. Inferior cervical ganglion
			58. Discuss Horner's syndrome.
Physiology	Thyroid hormone physiological functions	2	 58. Discuss the Synthesis and Secretion of the Thyroid Metabolic Hormones 59. Discuss the physiological functions of thyroid hormones 60. Describe the regulation of thyroid hormone secretion 61. Describe the diseases of thyroid: a. Hyperthyroidism b. Hypothyroidism
Biochemistry	Thyroid Hormone	2hr	 62. Describe the Sources of iodine, zinc and Selenium. 63. Discuss diseases of iron deficiency. 64. Discuss the role of Iodine, Zinc and Selenium in the synthesis and regulation of thyroid hormone.
General Medicine	Thyroid, and Parathyroid	1hr	65. Discuss the clinical aspects of common diseases associated with thyroid and parathyroid.
Oral and maxillofacial	Cervical Lymphadenopathy	1hr	66. Describe the features of acute & chronic cervical lymphadenopathy.
surgery	Facial space infections	1hr	67. Explain clinical features of facial space infections.

			Lab Work
Physiology	Thyroid Status examination	2	 68. Demonstrate the proper technique for inspecting the thyroid gland for visible enlargement or asymmetry in a patient. 69. Evaluate the thyroid gland's mobility by asking the patient to swallow and observing its movement with the trachea 70. Relate physical examination findings to the physiological changes in thyroid function (e.g., hypo- or hypersecretion of thyroid hormone. 71. Interpret findings from thyroid examination and correlate them with clinical conditions such as goiter, hypothyroidism, or hyperthyroidism
Anatomy	Anterior and posterior triangles of neck	2hrs	72. Demonstrate surface landmarks on a person of anterior and posterior triangles of the neck.
	Pharynx	2hrs	73. Demonstrate surface anatomy of pharynx on model.
	Larynx	2hrs	74. Demonstrate the gross features of larynx.
	Thyroid Gland	2hrs	75. Identify histological features of thyroid gland.
	Cervical vertebrae	2hrs	76. Identify different parts of cervical vertebrae
			• Atlas(C1)
			• Axis(C2)
			• C3
			• C7

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		Th	eme 3: Earache & Imbalance
Gross Anatomy	External Ear	1hr	77. Discuss parts of external ear.
	External Acoustic Meatus.		78. Describe features of external acoustic meatus.
	Tympanic Membrane		79. Describe structure of tympanic membrane.
	Middle Ear	1hr	80. Describe features of middle ear.
			81. Explain boundaries of middle ear.
			82. Briefly explain functions of middle ear.
			83. Briefly explain mastoid air cells.
	Internal Ear	1hr	84. Explain bony and membranous labyrinth.
Neuroanatomy	Vestibulocochlear	1hr	85. Explain the origin, course, branches of the divisions of the
	Nerve		vestibulocochlear nerve and enumerate its functions.
Physiology	Auditory System	2hrs	 86. Explain conduction of sound from the tympanic membrane to the cochlea 87. Describe functional anatomy of the cochlea 88. Describe the functions of organ of corti. 89. Discuss auditory pathways and functions of cerebral cortex in hearing 90. Describe types of deafness.
			Lab Work
Anatomy	Ear	2hrs	91. Demonstrate various structures of ear on model.
Physiology	Hearing tests	2hrs	 92. Demonstrate the correct technique for performing basic hearing tests, including the Rinne test, Weber test, and Schwabach test, using a tuning fork. 93. Apply the principles of air conduction (AC) and bone conduction (BC) to interpret the results of the Rinne test. 94. Analyze the findings of the Weber test to differentiate between conductive and sensorineural hearing loss. 95. Perform the absolute bone conduction test (Schwabach test) to assess the integrity of cochlear function. 96. Interpret the results of hearing tests in relation to normal and abnormal auditory physiology, identifying potential causes of hearing impairment.

		The	me 4: Difficulty in Chewing
Anatomy	Muscles Of	2hrs	97. Explain origin, insertion, nerve supply, blood supply and actions of
	Mastication		muscles of mastication.
	Otic Ganglion	1hr	98. Describe location and connections of otic ganglion.
			99. Briefly explain branches of otic ganglion.
Physiology	Ingestion of food	1hr	100. Describe the process of mastication (chewing)
			101. Enlist the muscles involved in masticatory process
			102. Name the cranial nerve that innervate muscles of mastication
			103. Describe chewing reflex
			104. Discuss the importance of chewing
Oral Biology &	Deciduous teeth	1hr	105. Describe differences between deciduous and permanent teeth.
Morphology	Eruption	3hrs	106. Describe various eruption movements.
Morphology			107. Discuss the theories of eruption.
			108. Describe mechanism of tooth movement.
			109. Describe histology of tooth movement.
	Shedding	3hrs	110. Describe the process of shedding of deciduous teeth.
			111. Enumerate the differences in the shedding pattern between the
			anterior and posterior teeth.
			112. Describe role of odontoclast in shedding of deciduous teeth.
			113. Explain the occurrence of retained deciduous root, deciduous teeth,
			and sub merged teeth.

Mandibular 1st &	3hrs	114. Discuss initiation of calcification, age of crown completion,
2nd Pre-Molars		age oferuption, and root completion.
		115. Discuss arch position and general outlines.
		116. Describe various aspects (labial, lingual, mesial, distal, and
		occlusalaspect) of crowns of mandibular pre-molars.
		117. Describe number, location and significance of pulp horns, chamber,
		andcanals.
		. Describe number, shape, and inclination of roots.
Maxillary 1 st Molar	2 hrs	119. Indicate initiation of calcification, crown completion age, age of
		eruption and root completion age, arch position, general outline.
		120. Describe various aspects (buccal, lingual, mesial, distal, and occlusal)
		of crowns of maxillary and mandibular molars.
		121. Describe number, shape, and inclination of roots.
		122. Describe number, location and significance of pulp horns, chamber,
		and canals.
		123. Differentiate between mandibular 1st and second molar. 124. Differentiate between mandibular and maxillary molars
Temporomandibular	4hrs	125. Enlist main types of joints (fibrous, cartilaginous, and synovial).
Joint		126. Describe TMJ Articulation and how does it differ from other synovial
		 joints. 127. Discuss the embryology, gross anatomy, and functions of TMJ. 128. Describe histological features of articular disc, structure of synovial membrane, composition of synovial fluid. 129. Identify the parts of TMJ in slides/image such as glenoid fossa, articular disc, superior & inferior compartments, and condyle on skull and on a patient. 130. Discuss the blood supply, nerve supply, age related changes in TMJ.

Orthodontics	Occlusion	2hrs	 131. Correlate clinical aspects of TMJ, integrate the knowledge of anatomy & 132. histology of TMJ into clinical practice and summarize TMJ disorders. 133. Define normal occlusion.
			134. Describe the functions of teeth in mastication. 135. Describe malocclusion.
	1		Lab Work
Anatomy	Muscles of mastication	2hrs	136. Demonstrate palpation of muscles of mastication.
Oral Biology & Tooth Morphology	Mandibular Pre- Molars	3 hrs	 137. Identify on tooth models/specimens or images crown outline, buccal, lingual, mesial, distal surfaces, occlusal table, and its components. 138. Draw and label different aspects of mandibular pre-molars (buccal, lingual, mesial, distal, and occlusal aspect).
	Maxillary 1 st Molar	2 hrs	 139. Identify on tooth models/specimens or images crown outline, buccal, lingual, mesial, distal surfaces, occlusal table, and its components. 140. Draw and label different aspects of maxillary 1st molar (buccal, lingual, mesial, and occlusal aspect).

Learning Resources			
S#	Subjects	Resources	
1.	Anatomy	A. GROSS ANATOMY	
		1. Last's Anatomy	
		B. EMBRYOLOGY	
		1. Langman's Medical Embryology	
		C. HISTOLOGY	
		1. Medical Histology By Laiq Hussain	
		Reference Books	
		1. Netter Atlas of Human Anatomy	
		2. Gray's Anatomy	
2.	Biochemistry	Text Books	
		1. Lippincott illustrated reviews 8 th	
		^{2.} Harper's illustrated Biochemistry 32 th	
		^{3.} U. Satyanarayan and U. Chakarpani 4 th	
		Reference Books	
		1. Lippincott illustrated reviews	
		2. MLA. Harvey, Richard A., PhD. Lippincott's illustrated reviews: Biochemistry	
		3. U. Satyanarayana Biochemistry	
		4. U. satyanarayan and U. Chakarpani 4th edition	
		5. Harper's illustrated Biochemistry	
		6. Rodwell VW, Bender DA ,Botham KM., Kennelly PJ, Weil P. Eds. Victor W.Rodwell	
		et al.	
		7. Fundamentals of Biochemistry	
		8. Donald V., Judith G. Voet, Charlotte W. John wiley and sons, New york	
		9. Netter's essential Biochemisty	
		10. Lippincott illustrated reviews	
		11.MLA. Harvey, Richard A., PhD. Lippincott's illustrated reviews: Biochemistry	

3.	Physiology	Textbooks 1. Guyton and Hall Textbook of Medical Physiology, 13th Edition by John E. Hall. 2. Human Physiology: From Cells to Systems, 8th Edition by Lauralee Sherwood
4.	Oral Biology	Textbook Ten Cate's Oral Histology Orban's Oral Histology and Embryology Concise Dental Anatomy and Morphology by James L. Fuller Reference Books Oral Anatomy, Histology and Embryology by B.K.B Berkovitz