Reviewed: 23-01-2026

# 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, 1st year 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.

| Theme 1: Neck Pain | | | |
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| **Subject** | **Topic** | **Hours** | **Learning Objective** |
| Gross Anatomy | Hyoid Bone | 1hr | 1. Describe the structure of the hyoid bone.<br>2. Describe muscle attachments of hyoid bone.<br>3. Explain the clinical implications. |
| | Anterior Triangle of Neck | 2hrs | 4. Describe superficial fascia and deep fascia.<br>5. Enlist subdivisions of anterior triangle of neck<br>a. Submental Triangle<br>b. Digastric triangle<br>c. Carotid Triangle<br>d. Muscular Triangle<br>6. Describe boundaries of anterior triangle of neck.<br>7. Describe content of anterior triangle of neck.<br>8. Describe boundaries of carotid triangle of neck.<br>9. Describe content of carotid triangle of neck.<br>10. Describe boundaries of muscular triangle.<br>11. Enlist contents of muscular triangle.<br>12. Describe attachments, nerve supply and actions of infrahyoid muscles.<br>13. Enumerate clinical problems related to anterior neck region. |
| | Posterior Triangle | 1hr | 14. Describe boundaries of posterior triangle.<br>15. Enlist divisions of posterior triangle.<br>16. Explain contents of posterior triangle.<br>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.<br>20. Describe structure of pharynx.<br>21. Describe structures passing between phyrangeal muscles.<br>22. Describe origin, insertion of constrictors of pharynx.<br>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.<br>26. Enlist muscles which cause movement of larynx.<br>27. Describe movements of vocal cords.<br>28. Describe blood supply of vocal cords.<br>29. Describe nerve supply of vocal cords.<br>30. Describe lymphatic drainage of vocal cords.<br>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.<br>33. Discuss attachments of deep cervical fascia and pharyngeal spaces. |
| | Common Carotid Artery and its branches | 2hrs | 34. Describe parts of common carotid artery i.e., carotid sinus, carotid body.<br>35. Describe course and relation of ECA.<br>36. Explain branches of ECA.<br>37. Describe parts of ICA with reference to relations. |
| | Subclavian, Internal Jugular, Brachiocephalic Vein | 2hrs | 38. Describe course of subclavian vein.<br>39. Describe course and relations of IJV.<br>40. Describe different parts of Brachiocephalic vein. |

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| | Lymphatic Drainage of Head and Neck | 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.<br>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.<br>47. Enlist the branches of brachial plexus. |
| **Theme 2: Neck Swelling** | | | |
| Gross Anatomy | Thyroid | 1hr | 48. Describe location and extent of thyroid gland.<br>49. Briefly explain capsules of thyroid.<br>50. Explain parts and relations of thyroid gland.<br>51. Describe blood supply of thyroid gland.<br>52. Describe nerve supply of thyroid gland.<br>53. Describe lymphatics of thyroid gland. |
| Neuroanatomy | Vagus Nerve and Ansa Cervicalis | 1hr | 54. Explain the origin, course, branches, and the divisions of the vagus nerve.<br>55. Describe Ansa cervicalis. |
| | Cervical Part of Sympathetic Trunk: | 1hr | 56. Describe features and relations of Cervical part of sympathetic trunk. |

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| | | | 57. Discuss features, location, and branches of:<br>a. Superior cervical ganglion<br>b. Middle cervical ganglion<br>c. Inferior cervical ganglion<br>58. Discuss Horner's syndrome. |
| Physiology | Thyroid hormone physiological functions | 2 | 58. Discuss the Synthesis and Secretion of the Thyroid Metabolic Hormones<br>59. Discuss the physiological functions of thyroid hormones<br>60. Describe the regulation of thyroid hormone secretion<br>61. Describe the diseases of thyroid:<br>a. Hyperthyroidism<br>b. Hypothyroidism |
| Biochemistry | Thyroid Hormone | 2hr | 62. Describe the Sources of iodine, zinc and Selenium.<br>63. Discuss diseases of iron deficiency.<br>64. Discuss the role of Iodine, Zinc and Selenium in the synthesis and regulation of thyroid hormone.<br>65. Describe the daily requirements for iodine, Zinc and Selenium<br>66. Enlist the sources of iodine Zinc and Selenium. |
| 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. |

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| surgery | Facial space infections | 1h | 67. Explain clinical features of facial space infections. |

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| **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.<br>69. Evaluate the thyroid gland's mobility by asking the patient to swallow and observing its movement with the trachea<br>70. Relate physical examination findings to the physiological changes in thyroid function (e.g., hypo- or hypersecretion of thyroid hormone.<br>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<br>• Atlas(C1)<br>• Axis(C2)<br>• C3<br>• C7 |

| Theme 3: Earache & Imbalance | | | |
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| 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.<br>81. Explain boundaries of middle ear.<br>82. Briefly explain functions of middle ear.<br>83. Briefly explain mastoid air cells. |
| | Internal Ear | 1hr | 84. Explain bony and membranous labyrinth. |
| Neuroanatomy | Vestibulocochlear Nerve | 1hr | 85. Explain the origin, course, branches of the divisions of the vestibulocochlear nerve and enumerate its functions. |
| Physiology | Auditory System | 2hrs | 86. Explain conduction of sound from the tympanic membrane to the cochlea<br>87. Describe functional anatomy of the cochlea<br>88. Describe the functions of organ of corti.<br>89. Discuss auditory pathways and functions of cerebral cortex in hearing<br>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.<br>93. Apply the principles of air conduction (AC) and bone conduction (BC) to interpret the results of the Rinne test.<br>94. Analyze the findings of the Weber test to differentiate between conductive and sensorineural hearing loss.<br>95. Perform the absolute bone conduction test (Schwabach test) to assess the integrity of cochlear function.<br>96. Interpret the results of hearing tests in relation to normal and abnormal auditory physiology, identifying potential causes of hearing impairment. |

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

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

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| | | | 131. Correlate clinical aspects of TMJ, integrate the knowledge of anatomy & 132. histology of TMJ into clinical practice and summarize TMJ disorders. |
| Orthodontics | Occlusion | 2hrs | 133. Define normal occlusion.<br>134. Describe the functions of teeth in mastication.<br>135. Describe malocclusion. |
| **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.<br>138. Draw and label different aspects of mandibular pre-molars (buccal, lingual, mesial, distal, and occlusal aspect). |
| | Maxillary 1st Molar | 2 hrs | 139. Identify on tooth models/specimens or images crown outline, buccal, lingual, mesial, distal surfaces, occlusal table, and its components.<br>140. Draw and label different aspects of maxillary 1st molar (buccal, lingual, mesial, distal, and occlusal aspect). |

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

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