Blood & Immunology-II Module

3rd Year BDS

Teaching Hours Allocation

Hour's allocation for different subjects

S. No	Subject	Hours
1.	General Pathology	4
2.	Periodontology	10
3.	Oral Pathology	27
4.	Oral Medicine	16
5.	General Medicine	10
6.	General Surgery	8
7.	Operative Dentistry	2
8.	Prosthodontics	7
9.	Oral & Maxillofacial Surgery	3
10.	Pediatric Dentistry	4
	Total	**91**

Themes

S#	Theme	Duration in Hours
1.	The pale patient	21
2.	Red and blue spots	28
3.	Neck Swelling I	11
4.	Burning Mouth	31
	Total	91

Learning Objectives

By the end of this Module, 3rd year BDS students will be able to:

1. Explain fundamental hematological and immunological principles relevant to dentistry and general health.
2. Describe the classification, mechanism and systemic as well as oral manifestations of hematological and immune mediated disorders.
3. Discuss clinical signs such as pallor, petechiae, ecchymosis, ulcers, rashes, and other oral or systemic features suggestive of underlying blood or immune disorders.
4. Interpret relevant laboratory and diagnostic tests (CBC, coagulation profile, biopsy, immunofluorescence, serology).
5. Demonstrate awareness of bleeding risks, anticoagulant use immunosuppression, and transfusion safety, and implement appropriate dental precautions.
6. Manage dental emergencies related to blood and immune disorders, including bleeding episodes and anaphylaxis.
7. Develop safe, evidence-based dental treatment plans for patients with hematological and immunological disorders.
8. Collaborate effectively with medical and surgical specialists to ensure integrated care for complex cases.
9. Integrate knowledge of blood and immunology into dental procedures (restorative, surgical, prosthodontic) to ensure patient safety and optimal outcomes.
10. Differentiate common benign and malignant swellings of the oral cavity, jaws, and head-and-neck region, and outline their diagnostic approach.
11. Correlate systemic diseases (hematological, vascular, autoimmune) with their surgical and medical management and their impact on dental treatment.
12. Manage oral manifestations of immunological and hypersensitivity reactions, including allergies, autoimmune diseases, and mucocutaneous disorders.
13. Evaluate patients with vascular disorders (e.g., varicose veins, coagulopathies, disseminated intravascular coagulation).
14. Explain their role in bleeding risks relevant to surgery and dentistry.

Theme 1: The pale patient		
Topic	Hours	Learning Objective
General Medicine		
Anemia: Hemolytic anemia	1	1. Define anemia 2. Enlist common causes of anemia. 3. Enlist and interpret relevant investigations to diagnose anemia. 4. Differentiate different morphological types of anemia and enlist their possible etiologies. 5. Define hemolytic anemia. 6. Classify hemolytic anemia according to etiology 7. Identify clinical features of hemolytic anemia 8. Describe the diagnostic workup for diagnosis of hemolytic anemia 9. Outline the treatment plan for hemolytic anemia
Nutritional deficiency anemia	1	10. Enlist the causes of iron deficiency anemia 11. Describe clinical features of IDA. 12. Enlist and Interpret relevant investigations to diagnose IDA and reach its cause. 13. Discuss management with iron deficiency anemia. 14. Define megaloblastic anemia. 15. Enlist causes of megaloblastic anemia 16. Identify systemic manifestations of vit B12 deficiency anemia 17. Enlist and Interpret relevant investigations to diagnose b12 deficiency anemia and reach its cause. 18. Outline the treatment plan for b12 deficiency anemia
Leukemia	1	19. Define leukemia and differentiate between acute and chronic, myeloid and lymphoid types. 20. Describe FAB classification of AML and ALL 21. Identify clinical features of leukemia 22. Analyze blood counts, peripheral smears, and bone marrow biopsy

		results for diagnosing leukemias and their subtypes. 23. Outline principles of management in acute and chronic leukemia according to their subtypes. 24. Enlist complications of disease and its treatment. 25. Explain the risk of infection and hemorrhage while opting for any dental procedure.
Oral Pathology		
Anemia	1	26. Classify Anemia and its oral manifestations Of iron deficiency hereditary anemia, hemolytic anemia, sickle cell anemia, pernicious anemia and thalassemia. 27. Discuss histopathology of different forms of anemia. 28. Identify key oral manifestations associated with thrombocytopenia and hemophilia
Leukemia	1	29. Classify Leukemia 30. Discuss oral manifestations of acute and chronic Leukemia
Fordyce's Granules	1	31. Define the common clinical presentation 32. Differentiate Fordyce granules from other oral lesions 33. Explain the pathogenesis and anatomical basis, 34. Discuss the benign nature and clinical significance of Fordyce's Granules 35. Communicate effectively with patients to reassure them about the harmless nature of the condition. 36. Apply knowledge in clinical practice to avoid misdiagnosis and unnecessary interventions.
Oral Medicine		
Oral manifestation of hematological disorders and their managements	2	37. Classify common hematological disorders. 38. Describe anemias and leukemias.

		39. Identify key oral manifestations associated with hematological diseases such as: • Iron deficiency anemia • Pernicious anemia • Leukemia • Thrombocytopenia • Hemophilia 40. Discuss diagnostic approaches for suspected hematological disorders in dental patients, including relevant laboratory investigations (e.g., CBC, peripheral smear). 41. Discuss oral management of these conditions with emphasis on oral cavity and dental care of such patients. 42. Discuss the Plummer Vinson syndrome.
Pediatric Dentistry		
Oral manifestation of anemia and its managements in Children	1	43. Discuss clinical signs of anemia in the oral cavity of pediatric patients during routine dental exams. 44. Describe the preparation of thalassemic patients with anemia prior to dental treatment considering hematological optimization, infection control and stress reduction ensuring intraoperative, preventive and post operative care. 45. Explain dental treatment formulation considering the child's hematologic status and medical management.
Periodontology		
Periodontal Disease Pathogenesis	3	46. Discuss microbiology of plaque associated periodontal disease. 47. Describe the histopathogenesis of Plaque associated Periodontal disease. 48. State the role of Host response in Periodontal Disease.

		49. Discuss Hypersensitivity reaction cell mediated and Humoral immunity. 50. Appraise the clinical significance of Dental Plaque in the initiation of gingivitis. 51. Explain in detail the four stages of gingival Inflammation. 52. Interpret the role of bacteria in the pathogenesis of periodontal tissue destruction.
Calculus & Plaque retentive factors	2	53. Define dental calculus. 54. Classify dental calculus. 55. Discuss its Origin, composition, mode of attachment, theories of Mineralization and Clinical significance. 56. Differentiate between dental stains, materia alba, dental pellicle. 57. Explain the role of calculus and other predisposing factors in Periodontal disease.
Periodontal pockets	2	58. Define and Classify Periodontal Pocket. 59. Explain the clinical features, pathogenesis and pocket contents. 60. Discuss Histopathology of Soft and hard tissue wall of the periodontal pocket. 61. Manage periodontal pockets according to multiple treatment options.
Ageing & Periodontium	1	62. Enlist the general features of aging found in different body tissues. 63. Discuss the age dependent changes in periodontal tissues. 64. Differentiate the pathological changes from age-dependent physiological changes in a patient.
Prosthodontics		
Biomechanics of Removable partial denture	1	65. Define the term biomechanics and explain its application in removable partial denture (RPD) design. 66. Describe the forces acting on an RPD during function 67. Identify the types of stresses transmitted to abutment teeth and edentulous ridges. 68. Classify and explain the possible movements of an RPD (vertical, horizontal, rotational, and torsional).

		69. Discuss the role of different components of RPD (direct retainers, indirect retainers, connectors, rests, and denture base) in controlling or minimizing movement. 70. Explain biomechanical considerations in different Kennedy classifications (tooth-supported vs. tooth-tissue-supported RPDs).
Oral and Maxillofacial Surgery		
Approach to patient with leukemia requiring dental extraction	1	71. Describe leukemia and its oral manifestations relevant to dental practice. 72. Explain the effects of leukemia and chemotherapy on hemostasis, immunity, and wound healing. 73. Describe indications and contraindications for dental extraction in leukemic patients. 74. Describe pre-extraction investigations in a leukemic patient, e.g., hemoglobin, total leukocyte count, absolute neutrophil count, and platelet count. 75. Discuss the significance of perioperative precautions, including antibiotic prophylaxis and local hemostatic measures, i.e., pressure application, suturing, and use of hemostatic agents. 76. Discuss post-extraction complications and their prevention. 77. Discuss the importance of interprofessional collaboration with a hematologist and a physician.
Lab Work		
General pathology		
Peripheral Smear	2	78. To prepare peripheral smear slide from blood Sample. 79. To learn all steps of staining peripheral smear slide. 80. To identify normal cell lines on the smear and recognize common abnormalities like anemia and thrombocytopenia.

Theme 2: Red and blue spots		
General Medicine		
Approach to patient with bleeding	1	81. Enumerate the different types of bleeding disorders according to their etiology. 82. Enlist common coagulation disorders 83. Discuss Clinical features of thrombocytopenia and coagulation defect with special focus on ITP and hemophilia & VWB disease. 84. Explain the principles of management in ITP, hemophilia & VWB disease. 85. Discuss the safe ranges of lab parameters for dental treatment
Shock and Hypersensitivity reactions (angioedema, anaphylaxis transfusion reaction,)	1	86. Define shock and describe its pathophysiology 87. Classify shock as per its etiology 88. Identify clinical features of each shock type 89. Describe principles of management: 90. Define and classify hypersensitivity reactions 91. Describe mechanisms and mediators involved in each type. 92. Enlist clinical examples and key features of each type. 93. Classify the different types of transfusion reactions 94. Recognize the clinical features of transfusion reaction 95. Outline management strategies of common transfusion reaction
Venous thromboembolism (VTE)	1	96. Define DVT and PE as types of venous thromboembolism (VTE). 97. Describe Virchow's triad. 98. Enumerate the risk factors for VTE. 99. Explain the clinical features of DVT and PE. 100. Describe diagnostic work up for diagnosis of VTE. 101. Describe wells criteria 102. Explain management principles for VTE

		103. Describe prevention of VTE
General Surgery		
Blood Transfusion and their implications	2	104. Define blood transfusion. 105. List the indications for blood transfusion in surgical patients. 106. Discuss the types of blood transfusion. 107. Explain Blood and blood products. 108. Discuss the Preparation of blood products and transfusion. 109. Explain the equipment's use to transfuse the blood. 110. Enumerate the complications of blood transfusion. 111. Describe the perioperative red blood cell transfusion criteria.
Hemorrhage & Shock	1	112. Define hemorrhage 113. Discuss the degree and classification of hemorrhage 114. Differentiate between surgical and non-surgical hemorrhage. 115. Define shock. Discuss its various types. 116. Describe management of hemorrhagic shock. Also describe damage control resuscitation.
Varicose veins	1	117. Define varicose veins. Discuss the causes and clinical presentation of varicose veins. 118. List the investigations for diagnosis. 119. Discuss the various modalities for the management of varicose veins. 120. Describe the signs & symptoms of thrombophlebitis associated with venous disease. 121. Discuss management of thrombophlebitis associated with venous disease.
Deep venous thrombosis & pulmonary embolism	1	122. Define Deep Venous Thrombosis (DVT) 123. Discuss the causes and risk factors in a surgical patient. 124. Describe the complications of DVT (pulmonary embolism) 125. Discuss the clinical presentation of DVT and pulmonary embolism

		126. Discuss the investigations, management principles & prevention strategies of DVT & pulmonary embolism.
Petechiae, purpura, ecchymosis	1	127. Define pressure sores. 128. Discuss the etiology, staging and management of pressure sores. 129. Discuss venous leg ulcers, its diagnosis, clinical presentation and management.
Gangrene	1	130. Define gangrene. List the specific types of gangrene with special reference to diabetic foot. 131. Classify ulcers. 132. Discuss the clinical presentation of various ulcers including diabetic foot ulcer. 133. Discuss the diagnosis and management plan of ulcers including diabetic foot.
Periodontology		
Periodontitis	2	134. Explain the Clinical and histopathological features of Periodontitis (Chronic, aggressive, recurrent, refractory). 135. Correlate the Clinical and histopathological features of Periodontitis (Chronic, aggressive, recurrent, refractory) 136. Explain the periodontal disease distribution 137. Discuss Management of Periodontitis 138. Enumerate risk factors for chronic periodontal disease
Oral Medicine		
Oral melanotic pigmentation	1	139. Classify oral pigmentations (physiological vs pathological; endogenous vs exogenous). 140. Describe the causes of pigmentation in the oral cavity. 141. Explain systemic diseases and hematological abnormalities associated with oral pigmentations

		142. Describe management plan for pigmented lesions.
Red/blue lesions	1	143. Enlist Red/blue lesions of the oral cavity 144. Discuss pyogenic granuloma in detail. 145. Describe in detail Erythroplakia with emphasis on diagnosis and treatment.
Oral Pathology		
Epulides	1	146. Define epulides. 147. Classify epulides. 148. Explain clinical feature and histopathology of epulides.
Nevi	1	149. Define nevi. 150. Classify nevi. 151. Explain clinical feature and histopathology of nevi.
Smoker melanosis		152. Explain clinical and histopathological features of smokers melanosis.
Leuko-erythroplakia	1	153. Explain clinical and histopathological features of leuko-erythroplakia
Melanoma Hemangioma Lymphangioma	2	154. Define Melanotic macule 155. Discuss the clinical and histopathological features of Melanotic macule 156. Define Melonoma 157. Discuss the clinical features, sub types, and diagnostic criteria of Melanoma. 158. Discuss hemangioma and lymphangioma. 159. Discuss the clinical types and features of hemangioma and lymphangioma.
Pediatric Dentistry		
Dental management of hemophilic children	1	160. Describe the pathophysiology, classification and clinical presentation of hemophilia in Pediatric patient. 161. Discuss hematological investigations and calculate the deficiency of factors IIIV and IX in hemophilic patient.

		162. Discuss the formulation of dental treatment plans (preventive/restorative/extraction) with appropriate modifications and medical consultation to minimize bleeding risk.
Oral & Maxillofacial Surgery		
Management of patient with bleeding disorders and on anticoagulants in dentistry	1	163. Discuss different bleeding disoders (hemophilia, thalassemia, drug induced, etc) 164. Discuss role of CBC, bleeding time, clotting time, INR/PT in pre-operative assessment and management 165. Explain the Role of various hemostatic agents in management
Operative Dentistry		
Hemostasis	1	166. Describe hemostasis and its clinical importance during cavity preparation, gingival retraction, and restorative procedures.
Prosthodontics		
Principles of Removable partial denture	3	167. Explain the functions of a removable partial denture and how they differ from complete dentures. 168. Describe how prosthesis function influences the design of an RPD (mastication, esthetics, phonetics, preservation of tissues). 169. Differentiate between the two main types of RPDs with regards to difference in support, impression registration and clasp design: ● Tooth-supported RPD (bounded edentulous spaces). ● Tooth–tissue supported RPD (distal extension / free-end saddle). 170. Discuss the biomechanical implications of each type on abutment teeth and supporting structures. 171. Explain the key requisites of partial denture design: • Support • Retention • Stability

		• Bracing • Reciprocation • Indirect retention • Major and minor connectors • Rests and rest seats 172. Discuss systematic approach to designing Removable partial dentures for different Kennedy classes.
Lab Work		
Oral Pathology		
Melanoma	1	173. Identify the histopathological features of Melanoma
Epulides	1	174. Identify the histopathological features of Epulides.
Leuko/erythroplakia	1	175. Identify the histopathological features of leuko/erythroplakia.
Theme 3: Neck swelling 1		
General medicine		
Lymphoma	1	176. Discuss the pathophysiology of lymphomas 177. Classify lymphomas 178. Discuss the clinical manifestations of lymphoma 179. Describe the clinical staging of lymphoma 180. Outline diagnostic workup plan for lymphoma 181. Enumerate the basic principles of management of lymphoma 182. Enlist the complication of lymphoma
Oral Pathology		
Non-Hodgkin lymphoma	1	183. Classify NHL 184. Describe histopathology of Non-Hodgkin lymphoma. 185. Describe the histopathology of Burkitt lymphoma 186. Describe the histopathology of MALT lymphoma
Hodgkin lymphoma	1	187. Classify lymphomas.

		188. Describe the histopathology of Hodgkin lymphoma.
Multiple myeloma	1	189. Describe histopathology and diagnosis of multiple myeloma
Granulomatous diseases	1	190. Describe chronic granulomatous diseases like sarcoiodis, wegneners granulomatois, orofacial granulomatosis and its oral manifestations.
General Surgery		
Cervical lymphadenopathy	1	191. Classify diseases of the cervical lymph nodes (inflammatory & neoplastic) 192. Describe their etiology and clinical presentation. 193. Discuss the diagnosis and management of cervical lymphadenopathy.
Oral & Maxillofacial Surgery		
Cervical Lymphadenopathy	1	194. Describe the anatomical classification of cervical lymph nodes. 195. Explain the lymphatic drainage of the oral cavity and its clinical relevance to diseases of the oral and maxillofacial region. 196. Discuss the common causes of cervical lymphadenopathy associated with odontogenic, salivary, and oral mucosal pathologies. 197. Differentiate between reactive, infective, and neoplastic lymphadenopathy based on clinical and radiological features. 198. **Explain** the early detection of lymph node involvement as part of comprehensive oral cancer screening.

		199. Outline the diagnostic workup for cervical lymphadenopathy.
Prosthodontics		
Major connectors	2	200. Define a major connector and explain its role in a cast partial denture. 201. List the basic characteristics of a major connector. 202. Discuss the Identification of different types of major connectors: • Maxillary major connectors. • Mandibular major connectors
Oral Pathology		
Lymphoma	2	203. Draw and identify the abnormal histopathological sections of Hodgkin lymphoma and Non-Hodgkin lymphoma.
Theme 4: Burning Mouth		
Oral Pathology		
Vesiculo bullous disorders	4	204. Classify Vesiculo Bullous Disorder 205. Explain pathogenesis of autoimmune blistering disorders. 206. Differentiate clinical and histologic features of pemphigus vs. pemphigoid. 207. Discuss oral and skin lesions of Erythema Multiforme. 208. Differentiate Erythema Multiforme from other ulcerative lesions. 209. Discuss precipitating factors of Erythema Multiforme 210. Enumerate diagnostic aids (biopsy, immunofluorescence).
Allergic Reactions: Contact stomatitis Angioedema	1	211. Classify oral allergic reactions. 212. Describe clinical features of contact stomatitis and angioedema.
Recurrent aphthous stomatitis Systemic lupus erythematosus	2	213. Describe clinical features of RAS in detail. 214. Discuss histopathogenesis of RAS in detail. 215. Describe Bechet's syndrome and its oral manifestations

		216. Explain the clinical features of patients with Glossitis, Burning mouth syndrome, Geographic tongue 217. Describe Systemic lupus erythematosus and its oral manifestations.
Lichen Planus	1	218. Discuss pathogenesis of lichen planus.
Pediatric Dentistry		
Aphthous ulcer and its management in Children	1	219. Describe aphthous ulcers and differentiate them from other oral ulcerative conditions. 220. Enumerate common triggers and discuss systemic associations and immunological disorders. 221. Describe the typical appearance, location, and progression of aphthous ulcers in children. 222. Enlist symptomatic relief measures and advise on dietary modifications and oral hygiene practices to reduce recurrence.
Acute herpetic Gingivostomatis	1	223. Define acute herpetic gingivostomatitis 224. Describe its etiology and pathogenesis of HSV-1 infection, including viral replication, latency in the trigeminal ganglion, and reactivation. 225. Discuss the clinical presentation highlighting prodromal symptoms, oral findings and associated sign 226. Explain the principles of management including supportive care, antiviral therapy, nutritional support and oral hygiene measures. 227. Discuss effective Communication effectively with parents about the nature of the disease, expected course, and treatment plan, recurrence and prevention of transmission.
General Medicine		

Systemic Lupus Erythematosus	2	228. Explain the pathophysiological mechanisms underlying systemic lupus erythematosus. 229. Describe the diagnostic criteria for SLE (ACR/EULAR). 230. Discuss the different systemic presentations of SLE. 231. Enlist and interpret the relevant laboratory investigations in the context of SLE. 232. Discuss the management plan according to the disease severity. 233. Describe common side effects of drugs used in the management of SLE.
Oral Medicine		
Immunologically mediated oral lesions: Aphthous ulcers, Behcets syndrome & Traumatic ulcers	1	234. Describe the causes & clinical features of Aphthous ulcers, Behcets syndrome & Traumatic ulcers. 235. Discuss the diagnosis and management plan for common ulcerative conditions (aphthous, traumatic ulcers etc) 236. Enlist the diagnostic tests for Aphthous ulcers, Behcets syndrome & Traumatic ulcers
Immunologically mediated oral lesions: • Erythema multiforme (types) • Pemphigus vulgaris • Mucous membrane pemphigoid • Systemic lupus erythematosus • Lichen Planus	2	237. Describe the causes & clinical features of all these conditions. 238. Discuss the diagnosis and treatment plan for these conditions. 239. Enlist the diagnostic tests needed in these conditions.
Immunologically mediated oral lesions: • Systemic lupus erythematosus	2	240. Describe the causes & clinical features of all these conditions. 241. Discuss the diagnosis and treatment plan for these conditions.

• Lichen Planus		242. Enlist the diagnostic tests needed in these conditions.
Viral infections • Herpes simplex virus • Herpes zoster • Epstein bar virus • Measles • Mumps • Herpangina • Hand foot and mouth disease • HIV	4	243. Describe the aetiology & spread of common oral viral infections. 244. Explain the clinical features & diagnostic modalities of common oral viral infections. 245. Discuss the management plan of common oral viral infections. 246. Enumerate the complications and prevention of common oral viral infections.
Bacterial infections • Tuberculosis • Syphilis • Gonorrhoea	1	247. Describe the aetiology & spread of common oral bacterial infections. 248. Explain the clinical features & diagnostic modalities of common oral bacterial infections. 249. Discuss the management plan of common oral bacterial infections. 250. Enumerate the complications and prevention of common oral bacterial infections.
Fungal infections • Oral Candidiasis • Primary & Secondary oral candidiasis • Oral manifestations of systemic candidiasis • Candida-associated lesions • Candida associated denture induced stomatitis • Angular cheilitis • Median rhomboid glossitis	2	251. Describe the aetiology & spread of common oral fungal infections. 252. Explain the clinical features & diagnostic modalities of common oral fungal infections. 253. Discuss the management plan of common oral fungal infections. Enumerate the complications and prevention of common oral fungal infections.

General Medicine		
HIV	1 hr	254. Define HIV infection and AIDS. 255. Summarize the epidemiology and its modes of transmission. 256. Describe the systemic features of AIDS 257. Enlist common opportunistic infections in patients with HIV. 258. Discuss kaposi sarcoma 259. Interpret diagnostic tests for HIV. 260. Enumerate standard precautions and cross-infection control measures in dental practice. 261. Outline a treatment plan for an HIV patient 262. Describe postexposure prophylaxis in HIV
Prosthodontics		
Minor connectors	1 hr	263. Define minor connectors and explain their role in a cast partial denture. 264. Explain the form and dimensions of minor connectors. 265. Discuss the ideal location of minor connectors on the cast. 266. Describe tissue stops used with minor connectors. 267. Explain finishing lines around the minor connector–denture base junction
Operative Dentistry		
Allergic reaction to restorative materials	1	268. Discuss allergic reactions to dental restorative materials (amalgam, resin, latex, eugenol).
Lab Work		
General Pathology		
Immunofluorescence staining	2	269. Identify specific Immunofluorescence stains. 270. Identify different steps in specimen collection and slide preparation
Oral Pathology		
Lichen Planus	2	271. Identify the histopathological features of lichen planus on slide.