B.D.S COURSE
DENTAL ANATOMY /
SYLLABUS
(With effect from 2010-11 onwards)
DENTAL ANATOMY, EMBRYOLOGY AND ORAL HISTOLOGY.

a) **INTRODUCTION:**
The course includes instructions in the subject of Dental Morphology, Oral Embryology, Oral Histology and Oral Physiology. A composite of basic Dental Sciences & their clinical applications.

b) **SKILLS**
The student should acquire basic skills in:

i. Carving of crowns of permanent teeth in wax.
ii. Microscopic study of Oral tissues.
iii. Identification of Deciduous & Permanent teeth.
iv. Age estimation by patterns of teeth eruption from plaster casts of different age groups.

c) **OBJECTIVES**
After a course on Oral Biology,

i. The student is expected to appreciate the normal development, morphology, structure & functions of oral tissues & variations in different pathological/non-pathological states.
ii. The student should understand the histological basis of various dental treatment procedures and physiologic ageing process in the dental tissues.
iii. The students must know the basic knowledge of various research methodologies

d) COURSE CONTENT

i. Theory: 105 hours

<table>
<thead>
<tr>
<th>DENTAL ANATOMY</th>
<th>HOURS</th>
</tr>
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<tbody>
<tr>
<td>1. Introduction. Dental Anthropology &amp; Comparative Dental Anatomy</td>
<td>3</td>
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<tr>
<td>2. Function of teeth.</td>
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<td>4. Tooth numbering systems (Different system)(Dental formula).</td>
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<tr>
<td>5. Chronology of deciduous and permanent teeth. (First evidence of calcification, crown completion, eruption and root completion).</td>
<td>2</td>
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<td>6. Deciduous teeth - a) Nomenclature. b) Importance of deciduous teeth. c) Form &amp; function, Comparative Dental Anatomy, fundamental curvature</td>
<td>4</td>
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<tr>
<td>7. Gross morphology of deciduous teeth.</td>
<td>5</td>
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<td>8. General differences between deciduous and permanent teeth.</td>
<td>1</td>
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<tr>
<td>9. Morphology of permanent teeth. Chronology, measurements, description of individual surface and variations of each tooth.</td>
<td>12</td>
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<tr>
<td>10. Morphological differences between incisors, premolars and molars of same arch.</td>
<td>1</td>
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<td>11. Morphological differences between maxillary and mandibular. incisors, canines, premolars and molars of the opposite arch</td>
<td>1</td>
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<tr>
<td>12. Internal Anatomy of Pulp.</td>
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<tr>
<td>13. Occlusion: a. Development of occlusion. b. Dental arch form. c. Compensating curves of dental arches. d. Angulations of individual teeth in relation to various planes. e. Functional form of the teeth at their incisal and occlusal thirds. f. Facial relations of each tooth in one arch to its antagonist or antagonists in the opposing arch in centric occlusion. g. Occlusal contact and intercusp relations of all the teeth of one arch with those in the opposing arch in centric occlusion. h. Occlusal contact and intercusp relations of all the teeth during the various functional mandibular movements. i. Neurobehavioural aspect of occlusion</td>
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ORAL PHYSIOLOGY

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<tbody>
<tr>
<td>1. Theories of calcification</td>
<td>1</td>
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<tr>
<td>2. Mastication and deglutition</td>
<td>1</td>
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<tr>
<td>Oral Embryology, Anatomy and Histology:</td>
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<tr>
<td>1. Development and growth of face and jaws.</td>
<td>1</td>
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<tr>
<td>2. Development of tooth.</td>
<td>3</td>
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<tr>
<td>3. Cranial nerves with more emphasis on V, VII and IX.</td>
<td>1</td>
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<tr>
<td>4. Blood supply, nerve supply and lymphatic drainage of teeth and surrounding structures</td>
<td>1</td>
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<tr>
<td>5. Cell - structure and function</td>
<td>1</td>
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<tr>
<td>6. Maxillary sinus - Structure, Variations, Histology function and clinical considerations</td>
<td>2</td>
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<tr>
<td>7. Salivary Glands - Classification, structure, function, Histology, Clinical Considerations and age changes.</td>
<td>4</td>
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</tbody>
</table>
9. ENAMEL:
Physical characteristics, chemical properties, structure.
Development - Life cycle of ameloblasts. Amelogenesis and Mineralisation.
Clinical considerations.
Age changes.

10. DENTIN:
Physical characteristics, chemical properties, structure.
Types of dentin.
Dentin innervation and hypersensitivity.
Development - Dentinogenesis and mineralisation.
Clinical considerations.
Age Changes.

11. PULP:
Anatomy, structural features, functions, pulp organs.
Development.
Clinical consideration
Age changes.

12. CEMENTIUM:
Physical characteristics, chemical properties, structure.
Cementogenesis.
Clinical consideration.
Age changes.

13. PERIODONTAL LIGAMENT:
Cells and fibers
Functions
Development
Clinical Considerations.
Age Changes.

14. ALVEOLAR BONE:
Physical characteristics, chemical properties structure.
Structure
Development.
Internal reconstruction.
Clinical consideration.

Tissue processing & Histochemistry

THEORIES OF ERUPTION AND SHEDDING. (Physiological tooth movement)

ii. Practical: 250 Hours

DENTAL ANATOMY:
Carving on wax blocks:
a. Individual tooth - Only permanent teeth of both arches.
   - Central, Incisors, Lateral, Canines, Premolars and 1st and 2nd molars

HISTOLOGY:
List of Histology slides:
Development of tooth:
01. Bud stage of tooth development.
02. Cap stage of tooth development.
03. Early bell stage of tooth development.
04. Late Bell stage of tooth development.
05. Root formation.

ENAMEL:
01. Enamel rods.
02. Hunter-Schreger Bands
03. Tufts, Lamellae, Spindles.
04. Incremental lines of Retzius.
05. Neonatal line.
06. Gnarled Enamel

DENTIN:
01. Dentino - Enamel junction.
02. Dentinal Tubules.
03. Incremental lines of Von Ebner.
04. Contour lines of Owen.
05. Neonatal line.
06. Tomes granular layer.
07. Interglobular Dentin.
08. Secondary Dentin.
09. Intratubular Dentin.
10. Intertubular Dentin.

CEMENTUM:
01. Cellular cementum.
02. Acellular cementum.
03. Cemento enamel junction
  - Type 1 - 60% type - Overlapping.
  - Type 2 - 30% type - Butt
  - Type 3 - 10% type - Cementum & Enamel do not meet.
04. Sharpey's fibers.
05. Hypercementosis.

PULP:
01. Zones of Pulp.
02. Pulp stones.

PERIODONTAL LIGAMENT:
01. Principle fibers of Periodontal ligament
  - Apical, Horizontal, Oblique, Aveolar crest, Interradicular, Transeptal

ALVEOLAR BONE:
01. Haversian system.
02. Trabeculated bone.
03. Mature and immature bone.

SALIVARY GLANDS:
01. Mucous gland.
02. Serous gland.
03. Mixed gland.

MAXILLARY SINUS:
Sinus lining (Pseudostratified ciliated columnar)
(Desirable to know)

ORAL MUCOUS MEMBRANE:
01. Parakeratinised epithelium.
02. Orthokeratinised epithelium.
03. Palate - Anterolateral zone.
04. Palate - Posterolateral zone.
05. Alveolar mucosa.
06. Vermilion border of lip.
07. Tongue - Circumvallate Papillae.
  - Fungiform Papillae
  - Filiform Papillae

Preparation of Ground sections, haematoxylin & Eosin sections & decalcified section

iii.  Lecture demonstration:
Identification of Individual teeth
  (1) Deciduous
  (2) Permanent
  (3) Mixed dentition using study models
  (4) Demonstration of preparation of ground section, Decalcification, Paraffin section
      and H & E Staining.

e)  SCHEME OF EXAMINATION
Distribution of Topics and Type of Questions for University written examination

<table>
<thead>
<tr>
<th>Contents</th>
<th>Type of Questions and Marks</th>
<th>Marks</th>
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<tbody>
<tr>
<td>Dental anatomy - one question - 14 marks</td>
<td>Structured Essays 2x14marks</td>
<td>28</td>
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<tr>
<td>Detailed morphology of Permanent teeth, Differences between Primary &amp; Permanent teeth, Occlusion and Arrangement of teeth.</td>
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<tr>
<td>B. Oral histology - one question - 14 marks</td>
<td>2x14marks</td>
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<tr>
<td>Development of tooth, Enamel-structure &amp; development, Dentin-structure&amp; development, Cementum, Dental pulp-structure &amp; histology, Periodontal ligament, Alveolar bone-structure &amp; histology,</td>
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Oral mucosa-structure & histology, Eruption of teeth

A. Oral histology - two questions - 16 marks
B. Dental anatomy - one question - 08 marks
C. Oral physiology - one question - 08 marks

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<thead>
<tr>
<th>Essay Type</th>
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<tbody>
<tr>
<td>Brief structured</td>
<td>32</td>
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<tr>
<td>Essays</td>
<td>4 x 8 marks</td>
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</tbody>
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A. Oral histology - five questions - 20 marks
B. Dental anatomy - three question - 12 marks
C. Oral physiology - one question - 04 marks
D. Oral embryology - one question - 04 marks

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<thead>
<tr>
<th>Question Type</th>
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<tbody>
<tr>
<td>Short Answers</td>
<td>40</td>
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<td>10 x 4 marks</td>
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Total 100

i. Theory

- University written Examination: 100 Marks
- University Viva: 25 Marks
- Internal Assessment: 25 Marks

ii. Practicals:

- Internal Assessment: 20 Marks
- University Practicals: 80 Marks

Grand Total 250 Marks

Mark Distribution for University Practical Examination:

- Tooth Carving: (Time allotted 75 Minutes) 25 Marks
- Spotters: (15 x 3 marks) 45 Marks
- Practical work Record: 10 marks

Type of Spotters:

- 08 Histology and Ground Section slides
- 05 Tooth Identification
- 02 Casts for identification of teeth, numbering system and age assessment

(Examiners are permitted to make minor modifications)