BACHELOR OF DENTAL SURGERY PROGRAMME

Semester 2

Faculty of Dental Sciences
University of Peradeniya

Bachelor of Dental Surgery Programme

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University of Peradeniya

2025

CONTENTS

INTRODUCTION

The Bachelor of Dental Surgery (B.D.S) is a five-year study programme, followed by a year of compulsory internship that will qualify you to practice dentistry in Sri Lanka. The training is geared towards transforming you to a dental surgeon who is fully competent to engage in evidence-based dental practice with an emphasis on prevention and early detection of dental diseases. The teaching activities comprise lectures, discussions, tutorial classes, in class assignments, laboratory work, clinical work as relevant to the discipline.

The study program is conducted entirely in English. While the intensive program is mostly intended to ensure that you reach a minimum level of competency required to follow classes in English medium, further training in English will continue throughout the first two semesters to help you improve your English language proficiency.

The first two semesters of the academic program consist of 13 courses. These courses impart knowledge and skills in biomedical sciences as a foundation for the study of clinical dentistry. In the first semester, there is a non-GPA course that will introduce you to the dental profession and common oral diseases and conditions.

The third semester consists of five courses namely Oral Biology, Tooth Morphology and Occlusion, Human Diseases 1, Human Diseases 2 and Dental Biomaterials. The two courses on Human Diseases cover fundamental mechanisms and general principles of diseases in the human body.

Fourth semester consists of two courses namely Human Diseases 3 and 4 which will enable you to study common human diseases further, especially those that have a bearing

on dental diseases and their treatment. In addition, a basic introduction to clinical skills, ethics, communication skills and professionalism is given in the fourth semester.

These four semesters are designed to help you acquire the knowledge and skills necessary to undergo the next phase of the study program comprising supervised hands on clinical training.

Structure of the 2nd Semester of BDS Curriculum

	Course Code	Course Name	Credits	Academic staff members assigned for each course	Semester coordinator
Semester 02	DS1201	Alimentation and Nutrition	2	Prof. MP Paranagama	Prof. AKS Arambawatta
	DS1202	Endocrinology, Metabolism & Excretion	3	Dr. KSND Gunawardena	
	DS1203	Head and Neck	3	Prof. HRD Peiris	
	DS1204	Nervous System	4	Prof. JACK Jayawardena	
	DS1205	Teeth and Supporting Structures	3	Prof. AKS Arambawatta	
	DS1206	English 2	1 n/GPA*	Ms. Dulshika Senanayake	

2nd SEMESTER COURSES

Course No: DS 1201
Course title: Alimentation and Nutrition
Credits: 2
Pre-requisites: None

Aims: This course aims to provide sufficient knowledge of the gastrointestinal system with reference to structure and function, enabling students to understand the basis of gastrointestinal disorders and their management. It also aims to provide a comprehensive knowledge of nutritional requirement and malnutrition.

Intended learning outcomes:

On successful completion of the course the students should be able to:

- Describe the development and functional organization of the gastro intestinal system
- Describe the process of digestion of food and absorption of nutrients
- Explain the physiological and biochemical basis of common gastro intestinal disorders
- Describe a balanced diet and its significance
- Describe special nutritional requirements in maintaining oral health, in different physiological stages of life and in common disease conditions
- Apply the knowledge on nutrition to describe the basis of common malnutrition conditions prevalent in Sri Lanka and to describe the strategies to overcome them.

Time Allocation (Hours): **Lectures:** 25 **In –class assignments:** 04 **Practical:** 06 **Self-Learning Hours:** 65

Course content:

Lectures:	**Hours**
1. Developmental of the GI system	2
2. Functional organization of the GI system	2
3. Histology of GI system in relation to function	2
4. Digestion of food and absorption of nutrients	2
5. Neuro-endocrine regulation of digestive process	2
6. Disorders related to digestion and absorption	2
7. Importance of a balanced diet for general health	2
8. Importance of a balanced diet for oral health	2
9. Diet and caries	2
10. Diet and cancer	2
11. Diet and non communicable diseases –diabetes, CVD, obesity	2
12. Common malnutrition conditions	1
13. Strategies to overcome common malnutrition conditions in Sri Lanka	2
Total	**25**
In Class Assignments:	
1. GI system	2
2. Nutrition	2
Total	**04**
Practical:	
1. Histology of GI system	2

2. Interpretation of laboratory reports related to GI disorders	2
3. Assessment of nutritional status and providing dietary advice	2
Total	**06**

Recommended References/ Prescribed Textbooks

1. AC Guyton and JE Hall. 2015. Textbook of Medical Physiology.13th ed. or later
2. WF Ganong. 2005. Review of Medical Physiology. 22nd ed. or later
3. TW Wickremanayaka. 1996. Food and Nutrition. 3rd ed. or later
4. R Murray. 2009. Harpers Illustrated Biochemistry. 28th ed. or later
5. B Young. 2006. Wheater's Functional Histology. A text and Color Atlas. 5th ed. or later

Assessment		**Percentage Marks**
In-course		15% - In-course assessment 1- 3 EMQs 15% - In-course assessment 2- 3 EMQs
End-semester	Theory	50% - 10 MCQs & 3 SAQs
	Practical	20% - 2 OSPEs

Course No: DS 1202
Course title: Endocrinology, Metabolism and Excretion
Credits:3
Pre-requisites: None

Aims: This course aims to provide sufficient knowledge of the role of hormones and excretory functions in homeostasis. It also provides sufficient knowledge on metabolism of nutrients and common metabolic derangements.

Intended learning outcomes:

On successful completion of the course the students should be able to:

- Describe the location and structure of endocrine glands, and identify the glands under light microscope,
- Describe the development and embryological defects/malformations of the pituitary, thyroid and parathyroid glands,
- Describe the synthesis, regulation of secretion, and actions of hormones,
- Explain the basis of clinical features of common endocrine disorders,
- Describe the regulation of body temperature in health and disease,
- Describe carbohydrate, protein and lipid metabolism,
- Explain the effects of hormones on metabolism of carbohydrate, protein and lipid and their common derangements,
- Describe the functional organization of the urinary system, the process of urine formation, and the characteristics of urine,
- Explain the basis for disorders in excretory function,
- Interpret clinical chemistry reports of common metabolic disorders and urine analysis.

Time Allocation (Hours): **Lectures:** 33 **In-class assignments:** 12 **Practical:** 12 **Self learning:** 93

Course content:

Lectures:	**Hours**
1. Development and functional anatomy of the endocrine glands	1
2. Histology of endocrine glands	1
3. Chemical structure, synthesis and mode of action of hormones	2
4. Secretion regulation and functions of hormones	
Basis of common endocrine disorders and clinical features	
I. Anterior pituitary hormones	2
II. Posterior pituitary hormones	1
III. Thyroid hormones	2
IV. Adrenocortical hormones	2
V. Pancreatic hormones	1
5. Regulation of body temperature	2
6. Energy production during fed state	2
7. Energy production and blood glucose homeostasis during fasting	2
8. Metabolism of cholesterol and lipoproteins	2

9.	Protein metabolism	2
10.	Principles of common metabolic derangements	2
11.	Organization of the urinary system	1
12.	Structure of a nephron including ultrastructure of different regions	1
13.	Glomerular filtration (GFR) and factors affecting GFR	2
14.	Renal clearance, tubular function, countercurrent mechanisms	2
15.	Acid-base balance	1
16.	Characteristics and composition of urine	1
17.	Renal function disorders	1
	Total	**33**
In class assignment:		
1.	Endocrinology	4
2.	Metabolism	4
3.	Urinary function	2
4.	Clinical Biochemistry of Urinary system	2
	Total	**12**
Practicals:		
1.	Histology of endocrine glands	3
2.	Endocrine disorders	3
3.	Interpretation of laboratory reports in relation to metabolic diseases	3
4.	Urinalysis and Interpretation of laboratory reports	3
	Total	**12**

Recommended References/ Prescribed Textbooks

1. AC Guyton and JE Hall. 2015. Textbook of Medical Physiology.13th ed. or later
2. WF Ganong. 2005. Review of Medical Physiology. 22nd ed. or later
3. DM Vasudevan, S Srikumari. 2007. Text book of Biochemistry for Dental students. 1st ed. or later
4. PC Champe,RA Harvey ,Dr. Ferrier. 2008. Lippincott's illustrated reviews: Biochemistry. 04th ed. or later
5. R Murray. 2009. Harpers Illustrated Biochemistry. 28th ed. or later
6. B Young. 2006. Wheater's Functional Histology. A text and Color Atlas. 5th ed. or later

Assessment		**Percentage Mark**
In-course		30% - 4 EMQs
End-semester	Theory	60% - 10 MCQs & 3 SAQs
	Practical	10% - 2 OSPEs

Course No: DS 1203
Course title: Head and Neck
Credits:3
Pre-requisites: None

Aims: This course aims to provide a comprehensive knowledge and understanding of the structure of the head and neck regions of the human body.

Intended learning outcomes:

On successful completion of the course the students should be able to:

- Identify the surface anatomical landmarks in the head and neck region
- Describe and identify the bones of the skull
- Describe and identify the arrangement of deep fascia in the head and neck region and appreciate their clinical relevance
- Describe and identifythe boundaries and contents of the anterior and posterior triangles of the neck
- Describe and identify the nerve supply, blood supply and lymphatic drainage of structures in the head and neck regions
- Describe and identify the structure of orbit, eye and lacrimal apparatus
- Describe and identifythe anatomy of the nasal cavity and paranasal sinuses
- Describe and identify the boundaries and contents of temporal, Infratemporal and pterygopalatine fossae
- Describe and identify the boundaries, surface features, innervation and blood supply of structures in the oral cavity,
- Describe and identify the clinical significance/ importance of the anatomy of the head and neck regions

Time Allocation (Hours): **Lectures:** 17 **In-class assignments:** 08 **Practical:** 48 **Self-learning:** 77

Course content

Lectures:

1.	Face and scalp	2
2.	Neck	3
3.	Parotid region	2
4.	Temporal and infratemporal regions	2
5.	Functional anatomy of the pharynx	1
6.	Functional anatomy of the larynx	2
7.	Lymph drainage of head and neck region	1
8.	Maxillary antrum	1
9.	Facial spaces of head and neck	2
10.	Strengths and weaknesses of the skull	1
	Total	**17**

In-classassignments:		
1.	Scalp, temple, face and osteology	2
2.	Neck	2
3.	Parotid, temporal and infratemporal region	2
4.	Nose and paranasal sinuses	2
	Total	**8**
Practical:		
1.	Osteology	3
2.	Superficial dissection of the scalp, temple and face	3
3.	Neck	9
4.	Suboccipital triangle	3
5.	Cranial cavity	3
6.	Orbit	3
7.	Parotid region	6
8.	Temporal and infratemporal region	6
9.	Submandibular region, mouth and tongue	6
10.	Nose and paranasal sinuses	3
11.	Larynx and pharynx	3
	Total	**48**

Recommended References/ Prescribed Textbooks

1. Edited by CS Sinnathambi. 2011. Last's Anatomy. Regional and Applied. 12thed. or later
2. KL Moore. 2006. Clinical Oriented Anatomy. 6thed. or later
3. AMR. Agur and AF Dalley. 2008. Grant's Atlas of Anatomy. 12thed. or later
4. Edited by S Standring. 2010. Gray's Anatomy, The Anatomical Basis of Clinical Practice. 40thed. or later
5. MJ Fehrenbach and SW Herring. 2012. Illustrated Anatomy of the Head and Neck. 04thed. or later
6. TH Abrahams. 2008. McMinn's Clinical Atlas of Human Anatomy. 06thed. or later

Assessment		**Percentage Mark**
In-course		15% - In-course assessment 1- 3 EMQs 15% - In-course assessment 2- 3 EMQs
End-semester	Theory	30% - 10 MCQs /3 EMQs & 2 SEQs
	Practical	40% - 14 SPOTs & 3 OSPEs

Course No: DS 1204
Course title: Nervous System
Credits: 4
Pre-requisites: None

Aims: This course aims to provide sufficient knowledge and understanding of the structure and function of the different components of the nervous system.

Intended Learning Outcomes:
On successful completion of the course the students should be able to:

- Describe the development of the brain and spinal cord
- Describe the structure and functional organization of the cerebral hemispheres, cerebellum, brain stem and the spinal cord
- Describe the coverings and blood supply to the brain and spinal cord
- Describe the ventricular system and cerebrospinal fluid
- Identify the structure of the cerebral hemispheres, cerebellum, brain stem and the spinal cord
- Describe the function of autonomic nervous system
- Describe the cranial nerve pathways
- Describe visual, auditory, gustatory and olfactory functions
- Examine the function of the nervous system including cranial nerve functions.

Time Allocation (Hours): **Lectures:** 43 **In-class assignments:** 18 **Practical:** 16 **Self-Learning:** 123

Course content:

Lectures:		**Hours**
1.	Initial development and Functional organization of the nervous system	1
2.	Peripheral nerve endings/ Peripheral nerves	1
3.	Topography of the spinal cord	1
4.	Internal structure of the spinal cord	1
5.	Ascending and descending pathways	2
6.	Topography and internal structure of the brain stem	2
7.	Topography and internal structure of the cerebral hemispheres	2
8.	Topography and internal structure of the cerebellum	1
9.	Blood supply of the brain	1
10.	Reflexes and supraspinal control of reflexes; Upper motor neuron and lower motor neuron lesions	3
11.	Cranial nerve pathways	5
12.	Supraspinal control of voluntary movements (reticular formation, basal ganglia, cerebellum & brain stem)	4
13.	Limbic system and higher functions	2
14.	Autonomic nervous system	2

15.	Physiology of pain	2
16.	Ventricles, choroid plexuses, CSF and Blood brain barrier	2
17.	Orbit, eye and lacrimal apparatus	2
18.	Physiology of vision	5
19.	Structure of the ear & hearing, auditory and vestibular functions	3
20.	Taste and smell	1
	Total	**43**
In-class assignments:		
1.	Spinal cord and Peripheral nerves, receptors, reflexes, ascending and descending pathways	4
2.	Cerebral hemispheres, cerebellum, coverings of the brain, ventricles, CSF and Blood supply of the CNS	2
3.	Cranial nerves and their pathways	4
4.	Physiology of pain	4
5.	Physiology of vision	2
6.	Physiology of hearing	2
	Total	**18**
Practical:		
1.	Spinal cord and Peripheral nerves, receptors, reflexes, ascending and descending pathways	3
2.	Cerebral hemispheres, cerebellum, Brain stem	2
3.	Coverings of the brain, ventricles, CSF and Blood supply of the CNS	2
4.	Cranial nerves and their pathways	5
5.	Vision	2
6.	Hearing	2
	Total	**16**

Recommended References/ Prescribed Textbooks

1. AC Guyton and JE Hall. 2015. Textbook of Medical Physiology.13th ed. or later
2. WF Ganong. 2005. Review of Medical Physiology. 22nd ed. or later
3. RS Snell. 2006. Clinical Neuro-anatomy. 06th ed. or later
4. B Young. 2006. Wheater's Functional Histology. A text and Color Atlas. 5th ed. or later
5. Edited by CS Sinnathambi. 2011. Last's Anatomy. Regional and Applied. 12thed. or later

Assessment		**Percentage Mark**
In-course		15% - In-course assessment 1- 3 EMQs 15% - In-course assessment 2- 3 EMQs
End-semester	Theory	50% - 10 MCQs /3 EMQs & 4 SAQs
	Practical	20% - 5 OSPEs

Course No: DS 1205
Course title: Teeth and Supporting Structures
Credits: 3
Pre-requisites: None

Aims: This course aims to provide the students a comprehensive knowledge of the development, structure and function of teeth and periodontium, enabling them to apply this knowledge in understanding clinical sciences.

Intended learning outcomes:

On successful completion of the course the students should be able to:

- Describe each stage of early tooth development
- Identify each stage of early tooth development under the light microscope
- Describe the development, structure, function, composition, and age changes of tooth forming and supporting tissues and their clinical considerations
- Identify the tooth forming and supporting tissues under light microscope
- Describe the chronology of tooth development, eruption and shedding
- Estimate the age of an individual using radiographs, dental casts and other records.

Time Allocation (Hours): **Lectures:** 31 **In-class assignments:** 10 **Practical:** 18 **Self-learning:** 91

Course content:

Lectures:		**Hours**
1.	Introduction to structure of oral tissues	1
2.	Tooth development, induction, bud stage and cap stage	2
3.	Tooth development – late bell stage	1
4.	Remnants of tooth development	1
5.	Introduction to dental hard tissues	1
6.	Amelogenesis	2
7.	Enamel structure and composition	2
8.	Dentinogenesis	2
9.	Dentine – structure and composition	2
10.	Pulp – development, structure and function	2
11.	Root formation, cementogenesis, structure and functions of cementum	2
12.	Development and structure of the periodontal ligament	2
13.	Development and structure of the alveolar bone	2
14.	Eruption and shedding of teeth	2
15.	Physiologic tooth movement	1
16.	Chronology and calcification of teeth & mix dentition	2
17.	Age changes of the teeth and periodontium and its clinical relevance	2
18.	Repair and regeneration of teeth and periodontium and its clinical relevance	2
	Total	**31**
In class assignment:		

1. Tooth development	2
2. Development and structure of enamel	2
3. Development, structure and functions of pulp-dentine complex	2
4. Development and structure of the periodontium	2
5. Chronology of tooth development, calcification and eruption of teeth	2
Total	**10**
Practicals:	
1. Introduction to oral histology	3
2. Tooth development – bud stage, cap stage and bell stage	3
3. Development and structure of enamel	3
4. Development, structure and functions of pulp-dentine complex	3
5. Development and structure of the periodontium	3
6. Chronology of tooth development, calcification and eruption of teeth	3
Total	**18**

Recommended References/ Prescribed Textbooks

1. BKB Berkovitz et.al. Oral Anatomy, histology and Embryology. 4th ed. or later
2. A Nanci. Ten Cate's Oral Histology, Development, structure, and Function. 7th ed. or later
3. MM Ash and SJ Nelson. Wheeler's Dental Anatomy, Physiology, and Occlusion. 9thed. or later

Assessment		**Percentage Mark**
In-course		15% - In-course assessment 1 – 2 EMQs & 2 OSPEs 15% - In-course assessment 2 – 2 EMQs & 3 OSPEs
End-semester	Theory	50% - 10 MCQs & 3 SAQs
	Practical	20% - 6 OSPEs

Course No: DS 1206
Course title: English 2
Credits:1- (Non-GPA)
Pre-requisites: None

Aims: This course aims to enhance the competency of English Language of the students enabling them to follow the BDS course effectively.

Intended learning outcomes:

On successful completion of the course the students should be able to:

- Read and understand academic texts using skimming, scanning, and intensive reading
- Face interviews confidently and make oral presentations
- Take down notes while following a lecture
- Write academic essays.

Time Allocation (Hours): **Lectures:** 5 **Practical:** 20 **Self learning**: 25

Course content:

Lectures:	
1. Update of grammar II	5
Total	**5**
Practicals:	
1. Presentations (individual)	3
2. Presentations (group)	3
3. Situational Dialogues	3
4. Application of tenses II	4
5. Essay Writing	2
6. English Club	2
7. Summarizing & Note- taking	3
Total	**20**

Recommended References/ Prescribed Textbooks

1. R Murphy. 2012. English grammar in use. A self-study reference and practice book for intermediate learners of English. 4th ed. or later
2. Wright, MR McCulloch and P Fitzgerald. 2010. English for medicine in higher education studies. 1st ed. or later
3. S Bailey. 2011. Academic Writing, A hand book for international students.3rd ed. or later
4. A Oshima and A Hogue. 2006. Writing Academic English. 4th ed. or later

Assessment		**Percentage Marks**
In-course		30% - 1 hr. structured paper
End-semester	Theory	30% - 1 hr. structured paper
	Practical	40% - Oral/Practicals