

BACHELOR OF DENTAL SURGERY PROGRAMME

Semester 1



Faculty of Dental Sciences
University of Peradeniya



Bachelor of Dental Surgery Programme

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2025

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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 1st Semester of BDS Curriculum

	Course Code	Course Name	Credits	Academic staff members assigned for each course	Semester coordinator
Semester 01	DS1101	Blood and Circulation	4	Dr. NS Piyarathne	Prof. HRD Peiris
	DS1102	Cell, Tissues and Molecular Genetics	4	Prof. JACK Jayawardena	
	DS1103	Reproduction and Early Development	2	Prof. HRD Peiris	
	DS1104	Respiratory System	2	Prof. KSN Ariyasighe	
	DS1105	Thorax and Abdomen	2	Dr. HMRW Angammana	
	DS1106	Introduction to Dentistry	1 n/GPA*	Dr. LAA Pradeepika	
	DS1107	English 2	1 n/GPA*	Ms. Dulshika Senanayake	

1st SEMESTER COURSES

Course No: DS 1101 Course title: Blood and Circulation Credits: 4 Pre-requisites: None	
Aims: This course aims to provide sufficient knowledge in the circulatory system with reference to development, structure and function, enabling students to understand the basis of cardiovascular disorders and their management.	
Intended learning outcomes: On successful completion of the course the students should be able to: <ul style="list-style-type: none"> ➤ Describe the development and structure of the cardiovascular system ➤ Explain the basis of common hematological investigations and interpret the findings ➤ Describe cardiac cycle and regulation of cardiac output, venous return and blood pressure ➤ Describe basic principles of electrocardiography and interpret basic findings ➤ Perform clinical examination of the cardiovascular system ➤ Apply the above knowledge to explain the physiological basis of common cardiovascular and hematological disorders. 	
Time Allocation (Hours): Lectures: 44 In-class assignments: 12 Practical: 20 Self-learning: 124	
Course content:	
Lectures:	Hours
1. Homeostasis	1
2. Body fluid compartments, volume distribution and composition	2
3. Lymph and mechanism of formation of edema	1
4. Composition and formation of blood	1
5. Blood cells	1
6. Structure and synthesis of hemoglobin & RBC	1
7. Haemopoiesis and haemolysis	1
8. Blood grouping and its significance	1
9. Hemostasis	2
10. Anaemia	2
11. Biochemical study of plasma proteins	1
12. Common hematological disorders	1
13. Functional anatomy of circulatory system and blood supply to heart	3
14. Microscopic structure of the wall of the heart and blood vessels	2
15. Development of the heart	2
16. Development of the arterial system	1
17. Development of the venous system	1
18. Foetal circulation and circulatory changes at birth	1
19. Common congenital abnormalities	2
20. Conduction system of heart	2
21. Heart sounds and cardiac cycle	3
22. Regulation of heart function	2

23.	Regulation of blood pressure	3
24.	Electrocardiography	2
25.	Common cardiovascular disorders and introduction to investigations	3
26.	Clinical biochemistry of cardiovascular function	2
Total		44
In class Assignment:		
1.	Blood	2
2.	Cardiovascular functions	4
3.	Functional Anatomy and Histology of CVS	2
4.	Development and congenital abnormalities of CVS	2
5.	Plasma protein and cardiac marker analysis	2
Total		12
Practicals:		
1.	Blood I	3
2.	Blood II	2
3.	Biochemical study of red blood cells and haemoglobin	3
4.	Plasma proteins	3
5.	Physical examination and histology of the cardiovascular system	3
6.	Electrocardiography	3
7.	Measurement of blood pressure	3
Total		20

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. Edited by CS Sinnathambi. 2011. Last's Anatomy. Regional and Applied, 12th ed. or later
4. KL Moore. 2006. Clinical Oriented Anatomy. 6th ed. or later
5. AMR Agur and AF Dalley. 2008. Grant's Atlas of Anatomy. 12th ed. or later
6. TW Sadler. 2006. Langman's Medical Embryology. 11th ed. or later
7. 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% - 6 OSPEs

Course No: DS 1102

Course title: Cell, Tissues and Molecular Genetics

Credits: 04

Pre-requisites: None

Aims: The course aims to give the students an understanding of the functional organization of cells, basic tissue types and the basic principles of molecular genetics enabling them to learn structure- function relations and its derangements in the disease processes.

Intended learning outcomes:

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

- describe the structural and functional organization of cells,
- describe cell division and explain its importance for growth and maintenance of the body and the propagation of the human species,
- identify basic tissue types under the light microscope,
- describe the relationship between the structure and function of the different tissue types,
- outline the basic structure of bio-molecules and their functions,
- describe the organization of human chromosomes and their abnormalities in relation to diseases,
- outline the major steps in gene expression and DNA replication,
- outline the principles of human genetic diseases,
- outline the importance of molecular biology techniques in diagnosis, treatment and management of diseases and forensic dentistry,
- interpret the results of the basic tests for major biomolecules routinely performed on biological samples,
- identify the genes and their mutations using basic bioinformatics.

Time Allocation (Hours):	Lectures: 45	In Class Assignments: 10	Practicals: 20
	Self-learning: 125		

Course content:

Lectures:	Hours
1. Organization of life - (Prokaryotes and Eukaryotes) structure of the cell	2
2. Cell division and cell cycle	3
3. Principles of cell communication	2
4. Methods of study of tissues, routine staining techniques, introduction to microscopy	2
5. Structure and function of epithelia and glands	3
6. Structure and function of connective tissues	1
7. Cell attachment and their behaviour in epithelial disorders	1
8. Structure and function of cartilage	1
9. Structure and histology of Bone	2
10. Osteogenesis & Remodeling	2
11. Structure and function of joints	2

12.	Structure and function of muscle tissue	1
13.	Structure of nerve tissue and neuromuscular junction	1
14.	Membrane transport mechanisms	1
15.	Electrical properties of membrane	2
16.	Function of neuromuscular junction	1
17.	Structure and biological significance of bio-molecules	3
18.	Activity and regulation of enzymes	2
19.	Collagen synthesis	1
20.	Organization of human chromosomes	1
21.	Structure and functions of RNA	1
22.	DNA replication	1
23.	Gene expression	2
24.	Principles of genetic diseases	2
25.	Inheritance patterns of genetic diseases	1
26.	Common genetic diseases in dental practice	2
27.	Principles of molecular biological techniques in diagnosis and management of diseases	2
Total		45
In class Assignment:		
1.	Structure of the cell, cell division and cell cycle	2
2.	Epithelia and glands, connective tissues, cell attachment and their behavior in epithelial disorders	2
3.	Structure of cartilage, bone, muscles and joints; osteogenesis & remodeling	2
4.	Structure and function of nerves & neuromuscular junction	2
5.	Importance of biomolecule-analysis in diagnosis of diseases	2
Total		10
Practicals:		
1.	Methods of study of tissues, routine staining techniques, introduction to microscopy	3
2.	Epithelia	3
3.	Glands & Connectives tissue	3
4.	Cartilage, Bone & Joints	3
5.	Muscles & nerves	2
6.	Plasma proteins	2
7.	Quantitative and qualitative analysis of bio molecules	2
8.	Identification of genes and their mutations using basic bioinformatics.	2
Total		20

Recommended References/ Prescribed Textbooks

1. RK Murray et.al. 2009. Harper's Illustrated Biochemistry. 28th ed. or later
2. B Young. 2006. Wheater's Functional Histology. A text and Color Atlas. 5th ed. or later
3. DM Vasudevan and S Srikumari. 2007. Text book of Biochemistry for Dental students. 01st ed. or later
4. PC Champe, RA Harvey ,Dr. Ferrier. 2008. Lippincott's illustrated reviews: Biochemistry. 04th ed. or later
5. J Bradley, D Johnson and BPobes. 2006. Lecture notes in Medical Genetics. 3rd ed. or later

Assessment		Percentage Marks
In-course		15% - In-course assessment 1 – 4 EMQs 15% - In-course assessment 2 – 4 OSPEs
End-semester	Theory	70% - 10 MCQs/4EMQs & 4 SAQs

Course No: DS 1103 Course title: Reproduction and Early Development Credits: 2 Pre-requisites: None			
Aims: This course aims to provide the students a basic knowledge regarding the organization and functions of male and female reproductive systems and early embryogenesis including congenital malformations			
Intended learning outcomes: On successful completion of the course the students should be able to: <ul style="list-style-type: none"> ➤ Briefly describe the structure and functions of the male and female reproductive systems ➤ Describe the importance of the hormonal and other bodily changes that take place during pregnancy and lactation ➤ Describe the early development of the human body from gametogenesis to the folding of the embryo, and its relationship to congenital malformations ➤ Appreciate the value of effective use of contraceptive methods. 			
Time Allocation (Hours):	Lectures: 26	In –class assignments: 06	Practical: 02
	Self-Learning Hours: 66		
Course content:			
Lectures:			Hours
1. Functional organization of the male reproductive system			2
2. Secretion and functions male sex hormones			2
3. Functional organization of the female reproductive system			2
4. Female sex hormones and female sexual cycle			2
5. Gametogenesis			2
6. Fertilization & implantation			2
7. Gastrulation & early embryonic development			2
8. Folding of embryo			2
9. Foetal membranes and placenta			2
10. Twinning			2
11. Types and common causes of congenital anomalies			2
12. Hormonal & other bodily changes during pregnancy & lactation			2
13. Effective use of contraceptive methods			2
Total			26
In Class Assignments:			
1. Embryonic and foetal development			2
2. Reproductive physiology			2
3. Congenital anomalies			2
Total			06
Practical:			
1. Contraception and infertility			2
Total			02

Recommended References/ Prescribed Textbooks

1. AC Guyton and JE Hall. 2015 Textbook of Medical Physiology. 13th ed. or later
2. Barret KE, Barman SM, Boitano S, Brooks HL. 2015. Ganong's Review of Medical Physiology. 25th ed. or later
3. Edited by CS Sinnathambi. 2011 Last's Anatomy. Regional and Applied. 12th ed. or later
4. AMR Agur and AF Dalley. 2017 Grant's Atlas of Anatomy 14th ed. or later
5. TW Sadler. 2015 Langman's Medical Embryology. 13th 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	70% - 10 MCQs & 3 SAQs

Course No: DS1104 Course title: Respiratory System Credits:2 Pre-requisites: None			
Aims: This course aims to provide sufficient knowledge on the respiratory system with reference to development, structure and function enabling students to understand the basis of respiratory disorders and their management.			
Intended learning outcomes: On successful completion of the course the students should be able to: <ul style="list-style-type: none"> ➤ Describe the development, functional organization of the respiratory system including developmental anomalies ➤ Describe the mechanics of respiration, pulmonary ventilation and alveolar ventilation, exchange and transportation of gasses ➤ Describe the neural and chemical regulation of respiration ➤ State the basis of respiratory function tests and abnormalities in common respiratory disorders ➤ Perform clinical examination of the respiratory system ➤ Interpret basic respiratory function test reports ➤ Perform cardiopulmonary resuscitation on a mannequin. 			
Time Allocation (Hours):	Lectures: 22 Self learning: 62	In-class assignments: 04	Practical: 12
Course content:			
Lectures:			Hours
1.	Development of the respiratory system		1
2.	Functional anatomy of the respiratory system including histology		2
3.	Skeletal and muscular arrangement of the thorax in relation to breathing		2
4.	Mechanics of respiration		2
5.	Lung volumes and capacities		2
6.	Pulmonary ventilation, alveolar ventilation, ventilation to perfusion ratio		2
7.	Gas exchange		2
8.	Gas transport between lungs and tissues		3
9.	Regulation of respiration		2
10.	Abnormalities of respiratory function		2
11.	Cardiovascular and respiratory changes during exercise		2
Total			22
In class assignment:			
1.	Anatomy/Histology of the respiratory system		2
2.	Physiology of Respiration		2
Total			04

Practicals:		
1.	Histology of Respiratory system	3
2.	Respiratory function tests	3
3.	Clinical examination of the respiratory system	3
4.	Cardiopulmonary resuscitation	3
Total		12

Recommended References/ Prescribed Textbooks

1. AC Guyton and JE Hall. 2015. Textbook of Medical Physiology. 13thed. or later
2. WFGanong. 2005. Review of Medical Physiology. 22nded. or later
3. Edited by CSSinnathambi. 2011. Last's Anatomy. Regional and Applied, 12thed. or later
4. KL Moore. 2006. Clinical Oriented Anatomy. 6thed. or later
5. AMR Agur and AF Dalley. 2008. Grant's Atlas of Anatomy. 12thed. or later
6. TW Sadler. 2006. Langman's Medical Embryology. 11thed. or later
7. B Young. 2006. Wheater's Functional Histology. A text and Color Atlas. 5thed. or later

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

Course No: DS 1105 Course title: Thorax and Abdomen Credits: 2 Pre-requisites: None			
Aims: This course aims to provide sufficient knowledge and understanding of the gross structure of the thoracic and abdominal regions of the human body.			
Intended learning outcomes: On successful completion of the course the students should be able to: <ul style="list-style-type: none"> ➤ Understand the terminology used in teaching and learning of anatomy ➤ Describe the osteology, joints, surface anatomy and surface marking of the thoracic and abdominal regions ➤ Describe the structural and functional organization of the body wall ➤ Describe the organization of the structures within the thoracic cavity and abdominal cavity ➤ Identify the anatomical structures of the body wall, thoracic cavity and abdominal cavity. 			
Time Allocation (Hours):	Lectures: 08	In –class assignments: 04	Practical: 40
	Self-learning: 48		
Course content:			
Lectures:			Hours
1. Terminology in anatomy			1
2. Surface anatomy & surface marking			2
3. Structural and functional organization of the body wall			3
4. Positional arrangements of the abdominal organs and major blood vessels			2
Total			08
In class Assignments:			
1. Osteology, joints and body wall			2
2. Mediastinum and abdomen			2
Total			04
Practical:			
1. Osteology			2
2. Surface anatomy & surface marking			1
3. Antero-lateral body wall (including axilla & brachial plexus)			11
4. Lungs and pleurae			3
5. Superior & anterior mediastinum			2
6. Structure of the heart			4
7. Posterior mediastinum			2
8. Abdominal organs and major blood vessels			10
9. Posterior body wall (back)			5
Total			40

Recommended References/ Prescribed Textbooks

1. CS Sinnathambi (Editor). 2011 Last's Anatomy. Regional and Applied. 12th ed. or later
2. AMR Agur and AF Dalley. 2017 Grant's Atlas of Anatomy 14th ed. or later
3. KL Moore, AF Dalley, AMR Agur. 2014 Clinically Oriented Anatomy. 7th ed. or later
4. SStandring (Editor).2016 Gray's Anatomy, The Anatomical Basis of Clinical Practice 41st ed. or later
5. TH Abrahams, JD Spratt, M Loucas, AN Van Schoor. 2013 McMinn's & Abraham's Clinical Atlas of Human Anatomy. 7th ed. or later

Assessment		Percentage Marks
In-course		30% - 4 EMQs
End-semester	Theory	30% - 10 MCQs/3 EMQs & 2 SEQs
	Practical	40% - 10 SPOTs & 3 OSPEs

Course No: DS1106 Course title: Introduction to Dentistry Credits: 1 (Non-GPA) Pre-requisites: None	
Aims: This course aims to provide a broad overview of the study program in dental sciences, dentistry as a profession and its scope to new undergraduates. This would include basic knowledge on the dental diseases and conditions that are common in Sri Lanka, their modes of treatment, and how to establish and maintain good oral health.	
Intended learning outcomes: On successful completion of the course the students should be able to: <ul style="list-style-type: none"> ➤ Have a broad overview of the study programme and the profession of dentistry sufficient to discuss the relevance and scope of dentistry as a profession in Sri Lanka. ➤ Have a broad understanding of the relevance of the basic components of the program to the professional practice of Dentistry. ➤ Have a broad understanding of the major oral and dental diseases affecting the population ➤ Appreciate the importance of maintaining good oral hygiene. ➤ Be able to engage in good oral hygiene practices and maintain an acceptable standard of oral health for the self. 	
Time Allocation (Hours): Lectures: 12 Observation session in clinics (Clinical): 12 Self-learning: 26	
Course content:	
Lectures:	Hours
1. Scope of Dentistry as a profession	2
2. Introduction to common oral diseases and conditions and Impact of oral Diseases / conditions on quality of life	2
3. Common anomalies in the oro-facial region	1
4. Prevalence of common oral diseases in Sri Lanka and the importance of Prevention	1
5. General health, medical problems and oral health	2
6. Maintaining good oral hygiene	4
Total	12

Assessment		Percentage Marks
End-semester	Theory	100% - 2 SAQs (Pass/Fail)

Course No: DS 1107 Course title: English 1 Credits: 1 (Non-GPA) Pre-requisites: None			
Aims: This course aims to enhance the overall understanding, communication/interaction in English Language enabling the students to have a sound foundation for the medium of instruction of the BDS course.			
Intended learning outcomes: On successful completion of the course the students should be able to: <ul style="list-style-type: none"> ➤ Use the tenses and active and passive voice correctly in writing and speech ➤ Produce cohesive and grammatically correct general and academic writing at sentence and paragraph level, ➤ Make oral presentations and participate in discussions ➤ Listen and comprehend lectures and take notes ➤ Write formal letters 			
Time Allocation (Hours):	Lectures: 5	Practical: 20	Self learning: 25
Course content:			
Lectures:			
1. Update of grammar			5
		Total	05
Practicals:			
1. Presentations (individual)			2
2. Presentations (group)			2
3. Situational Dialogues			2
4. Application of tenses I			2
5. Interviews			2
6. Movie Review			2
7. English Club			2
8. Creative Writing			2
9. Comprehension			2
10. Listening			2
		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. 04th ed. or later
2. Wright, MR McCulloch and Fitzgerald. 2010. English for medicine in higher education studies. 01st ed. or later
3. S Bailey. 2011. Academic Writing, A hand book for international studies. 03rd ed. or later
4. A Oshima and A Hogue. 2006. Writing Academic English. 04th ed. or later

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

