



Bachelor of Dental Surgery Programme

Semesters 1 - 4

Faculty of Dental Sciences

University of Peradeniya

2023

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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.

**ORGANIZATIONAL STRUCTURE OF THE
1 – 4 SEMESTERS OF BDS CURRICULUM**

	Course Code	Course Name	Credits	Course Coordinators	Semester Coordinators
Semester 01	DS1101	Blood and Circulation	4	Dr. H.M.R.W. Angamma	Prof. B.M.H.S.K. Banneheka
	DS1102	Cell, Tissues and Molecular Genetics	4	Prof.J.A.C.K. Jayawardena	
	DS1103	Reproduction and Early Development	2	Prof. B.M.H.S.K. Banneheka	
	DS1104	Respiratory System	2	Prof. K.S.N. Ariyasighe	
	DS1105	Thorax and Abdomen	2	Prof. B.M.H.S.K. Banneheka	
	DS1106	Introduction to Dentistry	1 non/GPA	Dr. P.V.K.S. Hettiarachchi	
	DS1107	English 1	1 non/GPA ⁺⁺	Ms. Dulshika Senanayake	
Semester 02	DS1201	Alimentation and Nutrition	2	Prof. M.P. Pranayama	Prof. B.M.H.S.K. Banneheka
	DS1202	Endocrinology, Metabolism & Excretion	3	Dr K.S.N.D. Gunawardena	
	DS1203	Head and Neck	3	Prof. H.R.D. Peiris	
	DS1204	Nervous System	4	Prof.J.A.C.K. Jayawardena	
	DS1205	Teeth and Supporting Structures	3	Prof. A.K.S. Arambawatta	
	DS1206	English 2	1 non/GPA	Ms. Dulshika Senanayake	
Semester 03	DS2101	Oral Biology	4	Prof. B.G.T.L. Nanadasena	Prof. H.N.S. Soysa
	DS2102	Tooth Morphology and Occlusion	3	Prof. B.G.T.L. Nanadasena	
	DS2103	Human Diseases -1	3	Prof. H.N.S. Soysa	

	DS2104	Human Diseases -2	5	Prof. P.R. Jayasooriya	
	DS2105	Dental Biomaterials	2	Prof. M.C.N.Fonseka	
Semester 04	DS2201	Human Diseases-3	5	Dr. H.M.T.D.K. Herath	Prof. J.A.M.S. Jayathilaka
	DS2202	Human Diseases-4	5	Prof. J.A.M.S. Jayathilaka	
	DS2203	Induction to Clinical Dentistry, Ethics and Professionalism	5	Prof. M.C.N.Fonseka	

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 pressurej		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 - 3EMQs 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:	
<ul style="list-style-type: none"> ➤ 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 OSPEs 15% - In-course assessment 2 – 6 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	In-class assignments: 04	Practical: 12
	Self learning: 62		
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:

- 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.

<ul style="list-style-type: none"> ➤ 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)

<p>Course No: DS 1107 Course title: English 1 Credits: 1 (Non-GPA) Pre-requisites: None</p>
<p>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.</p>
<p>Intended learning outcomes: On successful completion of the course the students should be able to:</p> <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

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:	
<ul style="list-style-type: none"> ➤ 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:	
<ul style="list-style-type: none"> ➤ 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 Self learning: 93
	In-class assignments: 12
	Practical: 12
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

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-class assignments:	
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

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:			
<ul style="list-style-type: none"> ➤ 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
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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: <ul style="list-style-type: none"> ➤ 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. 4thed. 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. 4thed. or later

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

3rd SEMESTER COURSES

Course No: DS 2101			
Course title: Oral Biology			
Credits: 4			
Pre-requisites: Should have followed Semesters 1 & 2			
Aims: This course aims to provide students with a comprehensive knowledge of the oro-facial structures and their function 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:			
<ul style="list-style-type: none"> ➤ Describe the regional variations of oral mucosa in relation to function and identify them under the light microscope ➤ Describe the development of pharyngeal arches, their derivatives and associated congenital anomalies ➤ Describe the development and associated congenital anomalies of craniofacial structures ➤ Describe post natal growth of cranio facial structures ➤ Describe the functional anatomy of the salivary glands and their anatomical relations, and identify them macroscopically and microscopically ➤ Describe the structure and movements of TMJ, components of TMJ, and muscles of mastication ➤ Describe the functions, secretory mechanism and the regulation of the salivary secretion ➤ Describe the defense mechanism of oral cavity ➤ Describe the functional anatomy of pharynx and larynx ➤ Describe the mechanisms of mastication, swallowing and speech. 			
Time Allocation (Hours):	Lectures 36	In-class assignments 16	Practical 16
	Discussions 08	Self learning: 124	
Course content:			
Lectures:			Hours
1. Pharyngeal arches			1
2. Fate of the pharyngeal arches			1
3. Development of the face, palate, maxilla and mandible			3
4. Development of the tongue and thyroid gland			1
5. Development of the pituitary and salivary glands			1
6. Congenital anomalies associated with the pharyngeal arches			1
7. Postnatal growth of the cranio-facial complex			3
8. Introduction to the oral cavity			1
9. Functional anatomy of the skin			1
10. Functional anatomy of the oral mucosa			2
11. Gingiva and dento-gingival junction			2
12. Functional anatomy of the lip, cheek and palate			1
13. Functional anatomy of the tongue			1
14. Defence mechanisms of the oral cavity			1

15. Functional anatomy of the salivary glands-morphology, distribution, Relations and histology	2
16. Composition and functions of saliva	1
17. Glandular mechanism of salivary secretion	2
18. Secretion of water, electrolytes and protein	1
19. Regulation of salivary secretion	1
20. Overview of the masticatory apparatus including the muscles of mastication	1
21. Histology, morphology and relations of temporomandibular joint	1
22. Movements of temporomandibular joint and mandible during mastication	1
23. Masticatory cycle and jaw reflexes	2
24. Anatomy of the pharynx and larynx in relation to swallowing and speech	1
25. Suckling and swallowing	2
26. Speech	1
Total	36
In class assignment:	
1. Skin and oral mucosa	2
2. Development and growth of the cranio-facial complex	2
3. Functional organization and histology of salivary glands	2
4. Physiology of salivary secretion	2
5. Saliva as a diagnostic tool	2
6. Structure of the masticatory apparatus	2
7. Mastication	2
8. Suckling, swallowing and speech	2
Total	16
Practicals:	
1. Histology of skin and oral mucosa	3
2. Anatomy of salivary glands	2
3. Salivary secretion; resting and stimulated saliva	3
4. Saliva as a diagnostic tool	3
5. Anatomy of the temporomandibular joint and occlusion	2
6. Physiology of mastication	3
Total	16
Discussions:	
1. Development of the pharyngeal arches, face, and associated malformations	2
2. Clinical significance of the oral mucosa	2
3. Postnatal growth of the cranio-facial complex and its clinical relevance	2
4. Oral somatosensory mechanisms	2
Total	08

Recommended References/ Prescribed Textbooks

1. Oral Anatomy, histology and Embryology. BKB Berkovitz et.al. 2010. 04th ed. or later
2. Ten Cate's Oral Histology, Development, structure, & Function. A Nanc. 2008. 06th ed.or later
3. Essentials of Oral physiology. RM Bradley. 1995. 01st ed. or later
4. 2006. Langman's Medical Embryology.TW Sadler. 11th ed. or later
5. 2011. Last's Anatomy. Regional and Applied. Edited by CS Sinnathambi. 12th ed. or later
6. Clinical Oriented Anatomy. KL Moore. 2006. 6th ed. or later
7. Grant's Atlas of Anatomy. AMR Agur and AF Dalley. 2008. 12th ed. or later

Assessment		Percentage Marks
In-course		10% - In-course assessment 1- 3 OSPEs 20% - In-course assessment 2- 5 OSPEs
End-semester	Theory	70% - 10 MCQs & 4 SAQs

Course No: DS 2102	
Course title: Tooth Morphology and Occlusion	
Credits: 3	
Pre-requisites: Should have followed Semesters 1 & 2	
Aims: This course aims to provide students with a comprehensive knowledge of the occlusion of deciduous and permanent dentitions and the morphology of each tooth enabling them to relate this knowledge to clinical dentistry.	
Intended learning outcomes: On successful completion of the course the students should be able to:	
<ul style="list-style-type: none"> ➤ Precisely identify and describe the morphology of teeth of deciduous and permanent dentitions ➤ Accurately draw diagrams depicting the morphology of teeth and carve models of teeth with a suitable material ➤ Chart the teeth ➤ List and describe the features of the normal occlusion of the deciduous and permanent dentitions and their variations. 	
Time Allocation (Hours):	Lectures: 18 In-class assignments: 08 Practical: 34 Discussions: 06 Self learning hours: 84
Course content:	
Lectures:	Hours
1. Introduction to dental morphology	1
2. Tooth morphology-introduction to terminology and charting of teeth	2
3. Crown and root morphology of permanent incisors and canines	2
4. Crown and root morphology of permanent premolars	2
5. Crown and root morphology of permanent molars	2
6. Crown and root morphology of deciduous teeth	2
7. Occlusion	4
8. Evolution of teeth	1
9. Comparative dental anatomy	1
10. Introduction to dental anthropology	1
Total	18
In class assignment:	
1. Morphology of deciduous teeth and permanent teeth	3
2. Clinical application of morphology and occlusion	5
Total	08
Practicals:	
1. Morphology of the permanent incisors and canines	3
2. Morphology of the permanent premolars and molars	3

3. Morphology of the deciduous teeth	3
4. Occlusion	3
5. Carving of teeth	22
Total	34
Discussions:	
1. Crown and root morphology of deciduous teeth	3
2. Occlusion	3
Total	06

Recommended References/ Prescribed Textbooks

1. Oral Anatomy, histology and Embryology. BKB Berkovitz et.al. 2010. 04th ed. or later
2. Wheeler's Dental Anatomy, Physiology, and Occlusion. MM Ash and SJ Nelson. 2010. 9th ed. or later

Assessment		Percentage Marks
In-course	Practical	15% - In-course assessment 1 - Carving- (Anterior teeth) 15% - In-course assessment 2 - Carving-(Posterior teeth)
End-semester	Theory	50% - 2 SAQs/SEQs
	Practical	20% - 8 OSPEs

Course No: DS 2103

Course title: Introduction to Clinical Sciences - I

Credits: 3

Pre-requisites: Should have followed all courses of semesters 1 and 2

Aims: The course aims to introduce the students to clinical sciences with a detailed understanding of the general principles of human diseases, microorganisms and therapeutics enabling them to make decisions effectively in the management of patients.

Intended learning outcomes:

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

- describe the basic principles of disease processes
- describe the pathophysiology of acute and chronic inflammation
- explain the importance of normal microbial flora in health and disease
- describe structure, characteristics, and pathogenic behavior of clinically important microorganisms
- evaluate the importance of sterility and be able to create and maintain a sterile environment for laboratory procedures
- explain the basic concepts of pharmacokinetics and their clinical significance
- explain the basic concepts of pharmacodynamics and their clinical significance
- explain the adverse drug effects and drug-drug interactions
- write correct prescription and a referral to a given clinical scenario
- explain how a normal human being grow and develop from birth to adulthood
- explain the scope of surgical, medical, and critical care management of patients
- explain the importance of clinical history of child and adult patients.

Time Allocation (Hours):

Lectures: 37

In-class assignment: 10

Practical: 6

Self-learning hours: 97

Course content:

Lectures:	Hours
1. Microbes and their relevance to dentistry	1
2. Basic principles of Pharmacology	1
3. Importance of history taking and examination in assessing general health of a child patient	1
4. Introduction to surgical management of a patient	1
5. Introduction to pathological basis of diseases/conditions	1
6. Introduction to anesthesia and critical care	1
7. Normal human growth and development	2
8. General Pharmacology- Pharmacokinetics	3
9. Microbial structure, growth, and metabolism	1
10. Host microbial interactions and normal microbial flora	2
11. Importance of history taking and examination in assessing general health of a adult patient	1
12. Sterilization & disinfection	2
13. Acute inflammation	3
14. Drug metabolism	2
15. General Pharmacology- Pharmacodynamics	3
16. Clinical Pharmacokinetics	2
17. Adverse effects of drugs	2

18.	Drug interactions	2
19.	Drugs used in therapy of commonly encountered clinical problems	1
20.	Chronic inflammation	3
21.	Surgical history taking, examination, investigations	1
22.	Prescription of medication and writing a referral	1
Total		37
In-class assignments		
1.	Pharmacokinetics	2
2.	Normal microbial flora	2
3.	Pharmacodynamics	2
4.	Acute and chronic inflammation	4
Total		10
Practical:		
1.	Staining and visualization of microorganisms	2
2.	Sterilization & disinfection	1
3.	Acute and chronic inflammation	3
Total		6

Recommended References/ Prescribed Textbooks

1. KC Carrol, J Butel and S Morse. 2016. Jawetz, Melnick and Adelberg's Medical Microbiology. 27th ed. or later
2. LP Samaranayake. 2012. Essential Microbiology for Dentistry. 4th ed. or later
3. GM Brenner and C Stevens. 2012. Pharmacology. 4th ed. or later
4. RA Harvey et al. 2014. Pharmacology (Lippincott's illustrated Reviews Series). 6th ed. or later
5. P Kumar and ML Clark. 2016. Kumar and Clark's Clinical Medicine. 9th ed. or later
6. CS Herrington. 2014. Muir's Textbook of Pathology, 15th ed. or later
7. BR Walker et al. 2014. Davidson's Principles & Practice of Medicine. 22nd ed. or later
8. M Longmore et al. 2014. Oxford handbook of Clinical Medicine. 9th ed. or later
9. NS Williams. 2008. Bailey and Love's Short Practice of Surgery. 26th ed. or later
10. G McLatchie et al. 2013. Oxford Handbook of Clinical Surgery. 4th ed. or later

Assessment		Percentage Marks
In-course		20% - 4 EMQs
End-semester	Theory	60% - 3 SAQs + 10 MCQs
	Practical	20% - 5 OSPEs/OSCEs

Course No: DS 2104

Course title: Introduction to Clinical Sciences - II

Credit value: 5

Pre-requisites: Should have followed all courses of semesters 1 and 2

Aim: The course aims to impart knowledge to students on infections and immunity, pathophysiology of wounds, pathology of cell injury and pain enabling them to effectively learn and perform management strategies of common infections, immune disorders, wounds and pain

Intended Learning Outcomes:

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

- describe the virulence mechanisms of selected microorganisms and their pathogenesis of systemic infections,
- select effective pharmacological agents for microbial infections, and state their modes of action and dosage regimens,
- explain the pathological process of cell injury and its sequelae,
- explain the pathophysiology and the management of wounds,
- explain the procedures involved in collection and transportation of microbiological specimens of patients,
- describe host-response mechanisms of an antigenic challenge,
- explain the mechanisms of abnormal immune responses and outline their management,
- explain the pathophysiology of pain and select appropriate drugs in the management of pain,
- select effective pharmacological agents which act as agonists and antagonists to function of autonomic nervous system and state their mechanisms of actions
- identify the clinical features of common respiratory tract infections and liver diseases within the scope of dentistry
- outline the preventive strategies for common respiratory tract infections and liver diseases within the scope of dentistry
- perform history taking, general examination and assessment of respiratory system
- communicate efficiently with patients and maintain highest professional and ethical standards

Time allocation (Hours): Lectures **53** In-class assignments **16** Practicals **12**
Clinical work **24** Self learning hours **145**

Course content

Lectures	Hours
1. Gram positive, gram negative bacteria	8
2. Mycobacteria	1
3. HIV and hepatitis viruses	2
4. Fungi of dental relevance; <i>Candida</i>	1
5. Basic pathology related to infectious diseases	2
6. Antibacterial drugs	4
7. Antiviral drugs	1
8. Antifungal drugs	1
9. Cellular adaptations	1
10. Pathological basis of reversible and irreversible cell injury	2

11. Surgical infections	1
12. Antisepsis and asepsis in surgery	1
13. Pathophysiology of wound healing	2
14. Management of chronic wounds	1
15. Innate immunity	2
16. Antigen presentation and recognition	2
17. Cellular and humoral immune responses	2
18. Abnormal immune responses	2
19. Tumour and transplant immunology	2
20. Immuno-modulation by drugs (corticosteroids)	2
21. Drugs acting on autonomic functions	2
22. Pathophysiology of pain	1
23. Pain management with analgesics	2
24. Local anesthetics used in dentistry	2
25. Drugs used in general anesthesia and sedation	2
26. Common respiratory infections (bacterial and viral infections; pneumonia and TB)	2
27. Viral hepatitis and cirrhosis	2
Total	53
In class assignments	
1. Gram positive bacteria	2
2. Gram negative bacteria	2
3. Hepatitis B and HIV	2
4. Antimicrobial drugs	2
5. Patho-physiology of cell injury and wound healing	2
6. Local anesthetics	2
7. Immune response	2
8. Abnormal immune response	1
9. Immuno-modulatory drugs	1
Total	16
Practicals	
1. Gram positive and negative bacteria	4
2. Candidiasis	2
3. Cell injury and cellular adaptations	2
4. Collection and transportation process of biological samples	2
5. Immunology	2
Total	12
Ward classes	
1. Ward classes (Medicine)	8
2. Ward classes (Surgery)	8
3. Ward classes (Pediatrics)	8
Total	24

Recommended reading

1. KC Carroll, J Butel and S Morse. 2016. Jawetz, Melnick and Adelberg's Medical Microbiology. 27th ed.
2. LP Samaranayake. 2012. Essential Microbiology for Dentistry. 4th ed.
3. GM Brenner and C Stevens. 2012. Pharmacology. 4th ed.
4. RA Harvey et al. 2014. Pharmacology (Lippincott's illustrated Reviews Series). 6th ed.
5. P Kumar and ML Clark. 2016. Kumar and Clark's Clinical Medicine. 9th ed.
6. Robbins and Cotran Pathologic basis of disease, Kumar, Abbas and Aster; 9th ed
7. CS Herrington. 2014. Muir's Textbook of Pathology, 15th ed.
8. BR Walker et al. 2014. Davidson's Principles & Practice of Medicine. 22nd ed.
9. M Longmore et al. 2014. Oxford handbook of Clinical Medicine. 9th ed.
10. NS Williams. 2008. Bailey and Love's Short Practice of Surgery. 26th ed.
11. G McLatchie et al. 2013. Oxford Handbook of Clinical Surgery. 4th ed.

Assessment		Percentage marks
In-course		20% 5 EMQ
End- semester	Theory	60% - 6 SAQ + 10MCQ
	Practical	20% - 5 OSPE/OSCEs

Course No: DS 2105			
Course title: Dental Biomaterials			
Credits: 2			
Pre-requisites: Should have followed all courses of semesters 1 and 2			
Aims: The course aims to teach the physical and chemical properties of materials used in dentistry, which will form the scientific basis for the selection and manipulation of materials used in clinical dental practice.			
Intended learning outcomes: On successful completion of the course the students should be able to:			
<ul style="list-style-type: none"> ➤ explain physical and chemical characteristics of different types of dental biomaterials used in dentistry, ➤ critically assess and select safe, cost effective and clinically appropriate dental biomaterials for the common preventive/clinical/ laboratory procedures, ➤ manipulate specified dental biomaterials appropriately and accurately, based on the understanding of the scientific principles of their structure and properties. 			
Time Allocation (Hours):	Lectures: 25	Practicals: 10	Self learning: 65
Course content:			
Lectures:			Hours
1. Physical properties of Dental Materials			1
2. Bio-compatibility and Thermal properties of dental materials			1
3. Properties of Dental Amalgam			1
4. Clinical application of Dental Amalgam			1
5. Phosphate based dental cements and its application			1
6. Organometallic Chelate cements			1
7. Properties of Glass ionomer cements			1
8. Clinical application of glass ionomer cements			1
9. Introduction to Resins in dentistry			1
10. Light cured composites			1
11. Bonding techniques and bio materials			1
12. Dental Porcelains			1
13. Impression materials			1
14. Polymeric impression materials			1
15. Cast and die materials			1
16. Waxes used in dentistry			1
17. Cast metals for denture bases and indirect restorations			1
18. Precious alloys and Titanium alloys			1
19. Denture base materials			1
20. Medicaments used in dentistry			1
21. Materials used in endodontics			1
22. Abrasives and dental burs			1
23. Investment materials			1
24. Wrought alloys and wires			1

25. Fluoride preparations and uses	1
Total	25
Practicals	
1. Manipulation of cements	1
2. Familiarization of dental burs and endodontic materials	2
3. Impression trays, manipulation of impression materials and casting	3
4. Familiarization of waxes used in dentistry	1
5. Manipulation of restorative materials and bonding procedures	3
Total	10

Recommended References/ Prescribed Textbooks

1. JF McCabe and A Walls. 2008. Applied Dental Materials. 9th ed. or later
2. E Combe, FJT Burke and DW. Bernard. 1992. Dental Biomaterials. 1st ed. or later
3. JM Powers and JC Wataha. 2008. Dental Materials: Properties and Manipulation. 9th ed. or later
4. KJ Anusavice. 2003. Phillips' Science of Dental Materials. 11th ed. or later
5. R van Noort. 2007. Introduction to dental materials. 3rd ed. or later

Assessment		Percentage Marks
In-course		20% - 5 OSPEs
End-semester	Theory	60% - 2 EMQs & 5 MCQs, 3 SAQs
	Practical	20% - 5 OSPEs

4th SEMESTER COURSES

Course No: DS 2201

Course title: Human Diseases 3

Credit value: 5

Pre-requisites: Should have followed all courses of semesters 1, 2 and 3

Aim: The course aims to teach students on oral ecology, oral biofilm, oral infections and infection control in clinical dentistry and impart knowledge and skills required to manage patients with neurological, cardiovascular, respiratory, dermatological and hematological diseases / conditions.

Intended learning outcomes

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

- explain how the oral ecology is involved in the causation of dental caries, periodontal diseases and other oral infections,
- explain the organization of oral biofilm and its implications in the pathogenesis and management of infections,
- describe the pathophysiology of neurological, cardiovascular, dermatological and hematological diseases / conditions, which are relevant to clinical dental practice,
- describe the precautions necessary when treating patients with diseases/ conditions of the central nervous system (CNS) and cardiovascular system (CVS),
- outline the management of complications that may arise in patients with neurological, cardiovascular, dermatological and hematological diseases / conditions, during dental practice,
- evaluate the risk of infection transmission in clinical practice and take adequate measures to prevent cross infection.

Time Allocation (Hours):

Lectures: 53

In –class assignments: 16

Practical: 08

Clinical Work: 30

Self-Learning Hours: 143

Course content:

Lectures:	Hours
1. Ecology of the oral cavity	1
2. Organization of biofilms	1
3. Neurological disorders (epilepsy, migraine, etc)	4
4. Anxiety, phobias, depression and psychosis	3
5. Problems associated with child growth and development	3
6. Drugs acting on CNS	2
7. Ischemia and infarction	2
8. Edema	1
9. Thrombosis and embolism	2
10. Ischemic Heart Disease	1
11. Antithrombotics and drugs for angina and MI	1
12. Microbiology of dental caries	2
13. Microbiology of periodontal diseases	1
14. Atherosclerosis, CVS and related disorders	7
15. Drugs used for cardiovascular disorders	3
16. Anti-atherosclerotic drugs	1
17. Clinical microbiology (bacteremia, sepsis and endocarditis)	1
18. Sepsis and shock	2
19. Respiratory tract disorders Bronchial asthma, COPD, Lung tumors	3
20. Drugs acting on respiratory tract	1
21. HIV and STD	2

22. Skin and soft-tissue infections	1
23. Basic hematology	2
24. Hematological disorders	2
25. Hospital acquired infections	1
26. Drugs acting on hematological system	1
27. Dermatological and other conditions / disorders	2
Total	53
In class Assignment:	
1. Oral Micro tutorial (Oral ecology and biofilms)	2
2. Drugs acting on CVS (hypertension / heart failure / dysrhythmia)	2
3. General Pathology tutorial (infarction / edema / embolism)	2
4. Clinical pharmacology - I	2
5. Clinical Microbiology tutorial	2
6. Clinical pharmacology - II	2
7. Clinical Microbiology tutorial	2
8. Infection control in Dentistry	2
Total	16
Practicals	
1. Oral Microbiology practical (Oral ecology and biofilms)	2
2. Oral Micro practical (Dental caries and periodontal diseases)	2
3. General Pathology practical (infarction, edema and embolism)	2
4. Clinical Microbiology practical	2
Total	8
Clinicals	
1. Ward classes	15
2. Ward classes	15
Total	30

Recommended reading

1. KC Carrol, JButel and S Morse. 2016. Jawetz, Melnick and Adelberg's Medical Microbiology. 27th ed. or later
2. LP Samaranayake. 2012. Essential Microbiology for Dentistry. 4th ed. or later
3. GM Brenner and C Stevens. 2012. Pharmacology 4th ed. or later
4. RA Harvey et al. 2014. Pharmacology (Lippincott's illustrated Reviews Series). 6th ed. or later
5. P Kumar and ML Clarck. 2016. Kumar and Clark's Clinical Medicine. 9th ed. or later
6. CS Herrington. 2014. Muir's Textbook of Pathology, 15th ed. or later
7. BR Walker et al. 204. Davidson's Principles and Practice of Medicine. 22nd ed. or later
8. M Longmore et al. 2014. Oxford handbook of Clinical Medicine. 9th ed. or later
9. NS. Williams. 2008. Bailey and Love's Short Practice of Surgery. 26th ed. or later
10. G McLatchie et al. 2013. Oxford Handbook of Clinical Surgery. 4th ed. or later
11. PD Marsh et al. 2016. Marsh and Martin's Oral Microbiology. 6th ed. or later
12. Guidelines for infection control in dental health-care settings. 2003. CDC, USA or later

Assessment		Percentage mark
In-course		20% - 10 MCQs
End-semester	Theory	60% - 6 SAQs
	Practical	20% - 5 OSPEs/OSCEs

Course No: DS2202			
Course title: Human diseases 4			
Credits: 5			
Pre-requisites: Should have followed all courses of semesters 1, 2 and 3			
Aims: The course aims to teach students of the management and complications of neoplasia, cell injury, trauma, and endocrine disorders, and impart knowledge and skills required in the management of medical emergencies that may arise in dental practice.			
Intended learning outcomes: On successful completion of the course the students should be able to:			
<ul style="list-style-type: none"> ➤ explain the healing process and the management of fractures, ➤ explain the pathological process of cell injury and its sequale, ➤ explain pre and post-operative management of a patient undergoing surgery, ➤ state the methods used in repair and reconstruction surgery, ➤ describe the clinical presentation of patients with endocrine and bone disorders and the complications that may arise in managing patients with these disorders in dental practice, ➤ explain the pathogenesis, management, complications and prevention of neoplasia, ➤ determine whether a patient has a major general medical problem and refer patients to /seek advice from relevant medical personnel, as appropriate, ➤ take a medical history from a patient and carry out a basic medical/surgical examination ➤ provide basic and advanced life support and first aid to manage medical emergencies. 			
Time Allocation (Hours):	Lectures: 58	In-class assignments: 10	Practicals: 04
	Clinical work: 30	Self-Learning: 148	
Course content:			
Lectures:			Hours
1.	Cell injury and its sequale		2
2.	Fractures – diagnosis and management		2
3.	Fracture healing		1
4.	Pre and post op management of a patient undergoing surgery		3
5.	Fluid and electrolyte balance IV fluids		1
6.	Repair and reconstruction – general principles		1
7.	Common endocrine disorders with reference to clinical dentistry (DM, thyroid, parathyroid, adrenal)		3
8.	Bone disorders/infections		2
9.	Common diseases of thyroid gland (surgery)		1
10.	Dysplasia and other conditions		1
11.	Neoplasia		3
12.	Classification and tumour biology/surgical oncology		1
13.	Diagnosis and staging of tumors/ surgical oncology		1
14.	Surgical management of tumors		1
15.	Non surgical management of tumors		1
16.	Anti-neoplastic drugs		1
17.	Management of acute wounds (Trauma)		1
18.	Head and spinal injuries (Trauma)		1
19.	Management of Burns (Trauma)		1
20.	First aid		2
21.	Basic Life Support and Advanced Trauma Life Support		2
22.	Common medical emergencies in the dental clinic		4
23.	History taking of medical/surgical patients		1
24.	General and systemic examination of cardiovascular, respiratory, GIT, endocrine, renal and nutritional disorders		5

25. Dysphagia and dyspepsia	1
26. Drugs acting on GIT, renal system, endocrine system	3
27. Calcification	1
28. Obstructive disease due to calculi: salivary, biliary and urinary calculi	1
29. Drugs affecting calcium and bone	1
30. Musculoskeletal disorders	2
31. Drugs for arthritic disorders	1
32. Autoimmune disorders	1
33. Pigmentation	1
34. Amyloidosis	1
35. Chest radiographs/CT/MRI of head and neck	2
36. Nutrition management of a surgical patient	1
Total	58
In-class assignments	
1. Clinical pharmacology	4
2. Neoplasia	2
3. Fracture healing	2
4. Clinical microbiology	2
Total	10
Practicals	
1. General Pathology practicals (Neoplasia)	2
2. Fracture healing	2
Total	4
Clinicals	
1. Ward classes (General medicine)	15
2. Ward classes (General surgery)	15
Total	30

Recommended References/ Prescribed Textbooks

1. KC Carrol, J Butel and S Morse. 2016. Jawetz, Melnick and Adelberg's Medical Microbiology. 27th ed. or later
2. LP Samaranayake. 2012. Essential Microbiology for Dentistry. 4th ed. or later
3. GM Brenner and C Stevens. 2012. Pharmacology. 4th ed. or later
4. RA Harvey et al. 2014. Pharmacology (Lippincott's illustrated Reviews Series). 6th ed. or later
5. P Kumar and ML Clark. 2016. Kumar and Clark's Clinical Medicine. 9th ed. or later
6. CS Herrington. 2014. Muir's Textbook of Pathology, 15th ed. or later
7. BR Walker et al. 2014. Davidson's Principles & Practice of Medicine. 22nd ed. or later
8. M Longmore et al. 2014. Oxford handbook of Clinical Medicine. 9th ed. or later
9. NS Williams. 2008. Bailey and Love's Short Practice of Surgery. 26th ed. or later
10. G McLatchie et al. 2013. Oxford Handbook of Clinical Surgery. 4th ed. or later

Assessment		Percentage marks
In-course		20% - 10 MCQs
End-semester	Theory	60% - 6 SAQs
	Practical	20% - 5 OSPEs/OSCEs

Course No: DS 2203

Course title: Introduction to Clinical Dentistry, Ethics & Professionalism

Credits: 5

Pre-requisites: Should have followed all courses of semesters 1, 2 and 3

Aims: The course aims to impart basic knowledge and skills in identifying/using basic dental instruments, equipment and materials enabling students to understand/carry out basic operative dental procedures in a laboratory/clinical setting. The course also aims to develop communication skills and promote professional and ethical conduct among graduates.

Intended learning outcomes:

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

- operate a dental unit effectively and carry out basic maintenance of it,
- identify dental hand instruments and rotary instruments accurately and use dental hand instruments effectively,
- sterilize dental instruments by using appropriate methods,
- effectively excavate and prepare carious teeth for restorations by applying correct principles and techniques of tooth preparation in a laboratory setting,
- perform specified dental laboratory/clinical procedures in a laboratory setting,
- manipulate common dental materials accurately, in relation to their clinical applications, scientific principles of structure and properties in a clinical setting,
- explain the basic principles of radiography,
- communicate effectively with patients / the health-care team, and maintain the highest professional and ethical standards,
- explain the key ethical and legal norms and need for ethical behavior in the practice of dentistry.

Time Allocation (Hours):

Lectures: 25

Practicals: 90

Clinical work: 15

Self-learning: 120

Course content:

Lectures:	Hours
1. The Dental Unit, operation and maintenance	1
2. Introduction to basic and operative dental instruments	1
3. Role of laboratory techniques in replacement of missing teeth	1
4. Introduction to caries	1
5. Natural history of dental caries	1
6. Principles of caries excavation and cavity preparation	1
7. Principles of cavity preparation on occlusal surfaces	1
8. Introduction to periodontal diseases	1
9. Natural history of periodontal diseases	1
10. Basic periodontal instruments and instrumentation	1
11. Basic periodontal assessments and plaque control methods	1
12. Sterilization and disinfection of dental instruments	1
13. Cross infection control, universal precautions and reporting of accidents	1
14. Introduction to Radiography	1
15. Radiation physics	1
16. Dental radiographic techniques for periapical radiographs	1
17. Dental radiographic techniques for other intra-oral radiographs	1
18. Principles of cavity preparation on proximal surfaces	1

19. Principles of impression taking	1
20. Effective communication with a patient and obtaining consent	1
21. Delivering instructions and breaking bad news	1
22. Ethics and ethical duties of a clinician	1
23. Negligence, malpractice and the role of the Medical Council	1
24. Role of the dental surgeon in judicial medical aspects	1
25. Dental records and record keeping	1
Total	25
Practicals	
1. Maintenance and operation of dental units	2
2. Identifying and using common dental instruments	2
3. Introduction to skills lab equipment	2
4. Access and caries excavation	10
5. Cavity preparation for occlusal restorations	12
6. Cavity preparation for proximal restorations	12
7. Periodontal instruments and instrumentation	12
8. Intra oral radiography and techniques	5
9. Sterilization and cross infection control	3
10. Dental Laboratory Technology (DLT)	30
Total	90
Clinicals	
1. History taking	3
2. Examination of a dental patient	4
3. Dental Charting	2
4. Periodontal Charting	4
5. Communication	2
Total	15

Recommended References/ Prescribed Textbooks

1. TM Roberson, et al. 2012. Sturdevant's Art and Science of Operative Dentistry. 6th ed. or later
2. N Garg and A Garg. 2012. Textbook of Operative Dentistry. 2nd ed. or later
3. A Banerjee and TF Watson. 2011. Pickard's Manual of Operative Dentistry. 9th ed. or later
4. E Kidd. 2005. Essentials of Dental Caries: The Disease and Its Clinical Management. 3rd ed. or later
5. R Linda and B Boyd. 2012. Dental instruments: a pocket guide. 4th ed. or later
6. JF McCabe and A Walls. 2008. Applied Dental Materials. 9th ed. or later
7. E Combe et al. 1992. Dental Biomaterials. 1st ed. or later
8. AM Pattison and GL Pattison. 1991. Periodontal Instrumentation. 2nd ed. or later

Assessment		Percentage Marks
In-course		10% - In-course assessment 1-OSPE DLT 10% - In-course assessment 2-cavity preparation
End-semester	Theory	30% - 10 MCQs & 3 SAQs
	Practical	20% - Preparation of a proximal cavity 15% - Construction of record blocks 15% - 10 OSCEs/OSPEs