In the Name of God

Degree: Doctor of Dental Surgery (D.D.S.)

Introduction

D.D.S. is a six-year program which consists of a competency-based educational plan with emphasis on prevention caring, so that graduate students, besides sufficient and comprehensive knowledge in up-to-date dentistry sciences, have the skills for visiting patients and treating different kinds of oral and dental diseases. In this program, students pass basic sciences in two years and then enter the clinic for four years in order to pass courses in all dentistry departments and learn the diagnosis of different kinds of diseases in each department. The student completes a total of 207 credits within six years. As a result of working with numerous patients, students will become highly skilled in their clinical stage.

۞ Basic Sciences

In four semesters**, Basic Sciences** courses cover the natural structure of the body at the molecular and cellular level (biochemistry, histology, and anatomy) of development (embryology) and function (physiology) that all are presented in the form of integrated blocks. In addition to these, different subjects (microbiology, parasitology, mycology, virology, immunology, and pathology) are also provided for the students along with general courses.

At the end of the **Basic Sciences** courses, there will be a **comprehensive exam**.

۞ Pre-Clinical Phase

The students pass pre-clinic courses in the fifth semester in laboratories with different kinds of modules and educational models that are simulated with real clinical conditions and patients. After acquiring the requirements, eligible students enter the clinics to visit and treat patients. In the clinical stage, students (in small groups) enter the clinic and treat patients. Students of the Community Dentistry program enter the field and start the process of screening patients in the society.

۞ Clinical Phase

In the twelfth semester, students who have acquired enough skills as interns or pre-doctoral students enter the main clinic and visit patients in a similar fashion to practices in a private office under the supervision of proficient professors. In the main clinic, students, besides making medical files for the main treatment program, treat all kinds of dental problems of patients.

At the end of this semester, students test their scientific and practical capabilities by taking a final exam.

Goals of the D.D.S. Education Program

After completing the educational program for the D.D.S. degree, our graduates will be able to:

- Prepare highly qualified dental hygiene healthcare professionals;
- Apply their knowledge and skills to the practice of dentistry, including formulating an appropriate problem list, a set of competing hypotheses, and a diagnostic and therapeutic plan;
- Progress in the development of self-directed life-long learning skills, including the recognition of personal educational needs, selection of appropriate learning resources, and evaluation of progress;
- Gain professionalism through a commitment to professional responsibility, ethical principles, reflective practice, and self-improvement;
- Gain communication skills, including effective and humane interactions with patients, colleagues, health care personnel, and members of the community;
- Function as a collaborative member of the healthcare team;
- Incorporate pedagogy that fosters problem solving and critical thinking skills as a basic feature of the curriculum;
- Gain the flexibility to allow for enrichment, adaptability to learning styles, and developing alternate careers;
- Recognize the role of technology in the educational process and access to information for the efficient and effective practice of dentistry;
- Continuously evaluate by appropriate outcome data to ensure quality and continuous improvement.

Mission

The primary mission of Tehran University of Sciences' School of Dentistry is to provide access to high quality, publicly-funded dental education to regions in order to develop dentists who will make a personal commitment to serving the needs of rural and underserved communities through outreaching programs that are especially attentive to minority and underserved populations.

Students learn about the upstream factors that affect the health outcomes, such as personal behaviors, health care quality and access, social, cultural and economic factors, and the built and natural environment

The educational mission of TUMS is to graduate dentist with the ability and desire to improve the health of all people by alleviating suffering and eliminating healthcare disparities through their leadership in patient care, research, education, health care administration, and the community.

General Competencies

It is essential for dentistry students to have good written and oral communication skills. Students must be able to communicate effectively with patients, physicians, and other members of the health care team. The final applicant pool may be interviewed.

The Terms and Conditions of Admission to the Course

All applicants must apply electronically on our website *www.gsia.ac.ir.* After an application is submitted, the applicant will receive a confirmation e-mail and an application code from the Office of Admissions indicating successful submissions of the application.

If any part of the application is incomplete, our admission coordinator will request the missing information and mark the application incomplete until the requested information is submitted. The completed application form is reviewed in the preliminary review council (PRC).

Once the initial preliminary review council (PRC) has made a decision, the application will be sent to the School and the related department, for an Admission Review.

If you have requested or applied for a scholarship, your application is also forwarded to the Scholarship Committee.

Student Assessment

Students should take part in the end-of-the-term exams for each module separately. Some lecturers may decide to take an additional mid-term exam. The pass criteria for most exams are 50% of the total mark. However, if the average mark for all exams taken in each term is less than 10 out of 20, the student's admission to the next term would be conditional in which a reduced number of modules could be taken. Repetitive conditional admission may result in student's being expelled from the Pharmacy Program.

Ethical Issues

The graduates should:

- Observe the Patient's Bill of Rights (1) when working with the patients.
- Strictly observe Biosafety and Patient Safety Rules* concerning the patients, personnel, and workplace.
- Observe the Rulebook for Dress Code (2).
- Strictly observe the Regulations of Working with the Laboratory Animals (3).
- Carefully preserve resources and equipment.
- Truly respect faculty members, the staff, classmates, and other students and work for creating an intimate and respectful atmosphere.
- Observe social and professional ethical considerations in criticism.

1, 2, and 3 are contained in the Enclosures.

* Biosafety and Patient Safety Rules will be set out by the Educational Departments and will be available to the students.

Number and Type of Credits and Tables of the Courses

Total Number of Credits: 207

D.D.S. - 1st semester

	Subject	Number of credits Credit (theory)	Credit (practical)	Total credits	prerequisite	
1	*Anatomical Sciences I*	*3.0*	*1.0*	*4.0*		
2	*Biochemistry*	*4.0*	*1.0*	*5.0*		
3	*Application of computer in dentistry*			*1.0*		*1.0*
4	*Devine ethics*	*2.0*		*2.0*		
5	*Introduction to Religion I*		*2.0*		*2.0*	
6	*General English Language*		*3.0*		*3.0*	
	Total	15.00	2.0	17.00		

D.D.S. program Course Syllabus for International Students

D.D.S. - 2nd semester

	Subject	Number of credits Credit (theory)	Credit (practical)	Total credits	prerequisite	
1	*Anatomical Sciences II*	2.0	1.0	*Anatomical Sciences I*	3.0	
2	*Parasitology*	1.0		1.0		
3	*Medical Physics*	1.0		1.0		
4	*Social Health*	1.5	0.5	2.0		
5	*Family Health*	2.0		2.0		
6	*Psychology*	2.0		2.0		
7	*Persian Language*		3.0		3.0	
8	*Medical Terminology I*	1.0		*General English Language*	1.0	
9	*Physical Training I*		1.0		1.0	
10	*Introduction to Religion II*		2.0		*Introduction to Religion I* 2.0	
	Total	15.5	2.5	18.0		

D.D.S. - 3rd semester

	Subject	Number of credits Credit (theory)	Credit (practical)	Total credits	prerequisite
1	*Anatomical Sciences III*	1.0	1.0	*Anatomical Sciences II*	2.0
2	*Physiology*	5.0	1.0	*Biochemistry*	6.0
3	*Immunology*	2.0	1.0	3.0	
4	*Virology*	1.0		1.0	
5	*Microbiology*	3.0	1.0	4.0	
6	*Medical Genetic*		2.0		2.0
7	*Divine texts*	2.0		2.0	
	Total	16.0	4.0	20.0	

D.D.S. - 4th semester

	Subject	Number of credits Credit (theory)	Credit (practical)	Total credits	prerequisite
1	*Pathology*	2.5	0.5	3.0	
2	*Radiology Sciences I*	1.0	1.0	2.0	
3	*Cardiology*	1.0		1.0	
4	*Dental Anatomy and Morphology*			2.0	2.0
5	*Infection control*	1.0		1.0	
6	*Clinical Communication Skills*	1.0		1.0	
7	*Advanced Terminology II*	1.0		*Medical Terminology I*	1.0
8	*Iran Revolution*	2.0		2.0	
9	*Physical Training II*		1.0	*Physical Training I*	1.0
	Total	11.5	2.5	14.0	

D.D.S. - 5th semester

	Subject	Number of credits Credit (theory)	Credit (practical)	Total credits	prerequisite	
1	*General Pharmacology*	2.0		2.0		
2	*Theoretical Oral and Maxillofacial (OMF) Surgery 1*		1.0	1.0		
3	*Diagnostic Dentistry 1*	1.0		1.0		
4	*Theoretical Restorative Dentistry1*		1.0			1.0
5	*Practical OMF Pathology 1*		1.0		1.0	
6	*Specialized English 1*	1.0		1.0		
7	*Specialized English 2*	1.0		1.0		
8	*Basics of Restorative Dentistry*	2.0			2.0	
9	*Practical DMF Radiology 1*		1.0		1.0	
10	*Medical Emergencies in Dentistry*		1.0			1.0
11	*Basics of Dental Materials*	1.0			1.0	
12	*Basics of Complete Prosthodontics*		2.0			2.0
13	*Basics of Partial Prosthodontics*		1.0			1.0
	Total	14.0	2.0	16.0		

D.D.S. - 6th semester

	Subject	Number of credits			Total credits
		Credit (theory)	Credit (practical)	prerequisite	
1	*Practical OMF Surgery 1*		1.0		1.0
2	*Practical OMF Surgery 2*		1.0		1.0

3	*Practical Restorative Dentistry 1*		1.0		1.0
4	*Practical OMF Pathology 2*		1.0		1.0
5	*Pulp and Periodical complex*	1.0			1.0
6	*Theoretical Endodontics 1*	1.0			1.0
7	*Diagnostic Dentistry 2*	2.0			2.0
8	*Theoretical OMF Surgery 2*	1.0			1.0
9	*Systemic Diseases 1*	2.0			2.0
10	*Treatment of Complete Edentulous Patients*	1.0			1.0
11	*Theoretical DMF Radiology2*	1.0			1.0
12	*Practical DMF Radiology2*		1.0		1.0
13	*Practical Complete Prosthodontics 1*		2.0		2.0
	Total	9.0	7.0		16.0

D.D.S. - 7th semester					
	Subject	Number of credits			Total credits
		Credit (theory)	Credit (practical)	prerequisite	
1	*Practical DMF Radiology3*		1.0		1.0
2	*Practical Oral and Maxillofacial (OMF) Diseases 1*		2.0		2.0
3	*Diagnostic Dentistry 3*	2.0			2.0
4	*Specialized English 3*	1.0			1.0
5	*Specialized English 4*	1.0			1.0
6	*Geriatrics*	1.0			1.0
7	*Practical Partial Prosthodontics 1*		2.0		2.0
8	*Theoretical Orthodontics 1*	1.0			1.0
9	*Theoretical Periodontics 1*	1.0			1.0
10	*Dental Equipments and Ergonomics*	1.0			1.0
11	*Pain and pharmacology in Dentistry*	1.0			1.0
12	*Basics of Fixed Prosthodontics*	2.0			2.0
13	*Basics of Endodontics 1*	1.0			1.0
14	*Practical OMF Surgery 3*		2.0		2.0
	Total	12.0	7.0		19.0

D.D.S. - 8th semester					
	Subject	Number of credits			Total credits
		Credit (theory)	Credit (practical)	prerequisite	
1	*Practical Fixed Prosthodontics 1*		2.0		2.0
2	*Basics of Endodontics 2*	1.0			1.0
3	*Practical Restorative Dentistry 2*		2.0		2.0
4	*Practical Orthodontics 1*		1.0		1.0
5	*Practical Periodontics 1*		1.0		1.0
6	*Oral and Maxillofacial Traumatology*	1.0			1.0
7	*Theoretical Oral Health and Community Dentistry 1*	1.0			1.0
8	*Systemic Diseases 1*	2.0			2.0
9	*Diagnostic Dentistry 4*	1.0			1.0
10	*Theoretical Restorative Dentistry 2*	1.0			1.0
11	*Theoretical Orthodontics 2*	1.0			1.0
12	*Medical Ethics, Professional Commitment and Law*	1.0			1.0
13	*Research Methodology 1*	1.0			1.0
14	*Research Methodology 2*	1.0			1.0
15	*Theoretical Advanced Prosthodontics*	1.0			1.0
	Total	10.0	12.0		22.0

D.D.S. - 9th semester					
	Subject	Number of credits			Total credits
		Credit (theory)	Credit (practical)	prerequisite	
1	*Practical Endodontics 1*		2.0		2.0
2	*Practical Pediatric Dentistry 1*		2.0		2.0
3	*Practical Restorative Dentistry 3*		2.0		2.0
4	*Practical Complete Prosthodontics 2*		2.0		2.0
5	*Practical Fixed Prosthodontics 2*		2.0		2.0
6	*Practical Oral Health and Community Dentistry 1*		1.0		1.0
7	*Practical OMF Diseases 2*		1.0		1.0
8	*Theoretical Endodontics 2*	1.0			1.0
9	*Practical Orthodontics 2*		1.0		1.0
10	*Practical Periodontics 2*		1.0		1.0
11	*Theoretical Orthodontics 3*	1.0			1.0
12	*Theoretical Periodontics 2*	1.0			1.0
13	*Theoretical Pediatric Dentistry 1*	1.0			1.0
14	*Diagnostic Dentistry 5*	1.0			1.0
15	*Thesis 1*	1.0			1.0
	Total	6.0	14.0		20.0

D.D.S. - 10th semester					
	Subject	Number of credits			Total credits
		Credit (theory)	Credit (practical)	prerequisite	
1	*Practical Periodontics 3*		1.0		1.0
2	*Practical Orthodontics 3*		1.0		1.0
3	*Theoretical Periodontics 3*	1.0			1.0
4	*Practical Pediatric Dentistry 2*		2.0		2.0
5	*Theoretical Pediatric Dentistry 2*	1.0			1.0
6	*Practical Partial Prosthodontics 2*		2.0		2.0
7	*Theoretical Oral Health and Community Dentistry 2*	1.0			1.0
8	*Practical OMF Diseases 3*		1.0		1.0
9	*Practical OMF Surgery 4*		2.0		2.0
10	*Diagnostic Dentistry 6*	1.0			1.0
11	*Nutrition in Oral Health*	1.0			1.0
12	*Systemic Diseases 2*	2.0			2.0
13	*Practical Endodontics 2*		2.0		2.0
14	*Thesis 2*	1.0			1.0
15	*Scientific Writing*	1.0			1.0

	Total	9.0	11.0		20.0

D.D.S.- 11th semester

	Subject	Number of credits			Total credits
		Credit (theory)	Credit (practical)	prerequisite	
1	*Practical Periodontics 4*		1.0		1.0
2	*Practical Orthodontics 4*		1.0		1.0
3	*Practical Pediatric Dentistry 3*		2.0		2.0
4	*Practical Oral Health and Community Dentistry 2*		1.0		1.0
5	*Theoretical Advanced Prosthodontics 2*	1.0			1.0
6	*Clinical Governance and Quality Improvement*	1.0			1.0
7	*Diagnostic Dentistry 7*	1.0			1.0
8	*Systemic Diseases 3*	1.0			1.0
9	*Systemic Diseases 4*	1.0			1.0
10	*Practical Endodontics 3*		1.0		1.0
11	*Psychological Disorders*	1.0			1.0
12	*Ear, Nose, Throat*	1.0			1.0
13	*Thesis 3*	1.0			1.0
14	*Comprehensive Care1*	2.0			2.0
	Total	10.0	6.0		16.0

D.D.S. - 12th semester

	Subject	Number of credits	

		Credit (theory)	Credit (practical)	prerequisite	Total credits
1	*Comprehensive treatment2*	2.0			2.0
2	*Community Dentistry and Oral Health 3*	2.0			2.0
3	*Practical advanced Prosthodontics*		2.0		2.0
4	*Theoretical Implantology*	1.0			1.0
5	*Thesis 4*	4.0			4.0
	Total	9.0	2.0		11.0

Course Name: Biochemistry
Number of Credits: 4.0 (theory) – 1.0 (practical)
Course Type: Theoretical and Practical

General Aims and Description:

This is the first term of D.D.S. program in Tehran University of Medical Sciences, the Biochemistry Program fosters interactions among students and faculty, helping to broaden the students' appreciation of diverse research opportunities and to encourage interdisciplinary thinking in a highly collaborative atmosphere. This program has been an integrative force that aims to tie together various disciplines of genetics, biochemistry, microbiology, immunology, cell biology, etc. The goal is to train our students to examine scientific problems from many perspectives through individualized, flexible programs of coursework, and research. The biochemical pathways of living organisms are studied with a focus on metabolic processes. Topics include pathways linking nutritional intake and energy yielding processes as well as the application of underlying. Broad content includes a study of the chemistry and reactions of constituents of living matter, including carbohydrates, lipids, proteins, nucleic acids, vitamins, coenzymes, and minerals. In addition, the chemistry and regulation of the reactions and processes of whole organisms will be examined, which includes: endocrinology, enzymology, nutrition, intermediary metabolism, and biochemical mechanisms involved in select disease states.

References

1. ***Junqueira's Basic Histology***. *McGraw-Hill Medical 2010; 12th edition, chapters 1, 2, 3*
2. ***Guyton and Hall Textbook of Medical Physiology***. *Saunders 2011, 12th edition, chapters 4 & 5*
3. *Cohen B.J.* ***Medical terminology: an illustrated guide.*** *Walter Kluwer/Lippincott Williams & Wilkins 2008. 5th edition*
4. *Devlin T.M.* ***Textbook of Biochemistry with Clinical Correlation***. *John Wiley & Sons 2010; 7th edition*
5. *Murray R. et al.* ***Harpers Illustrated Biochemistry***. *McGraw-Hill Medical 2009; 28th edition*
6. ***Ganong's Review of Medical Physiology***. *McGraw-Hill Medical 2009; 23rd edition*

Biochemistry (theory) subjects

Session Title	*Hrs.*
Introduction to Cell and Molecule	**2**
Water and buffer	**2**
Introduction to Histology	**2**
Cell	**4**
Amino acid Structure and Classification	**2**
Amino acids and proteins classification	**2**
Amino acids and proteins functions	**2**
Amino acids and proteins Hemoglobin	**2**
Carbohydrates Mono- and Di- Saccharides	**2**
Carbohydrates Glycoconjugates	**2**
Lipids and Lipoproteins Structure	**4**
Enzymes	**6**
Vitamins and Coenzymes	**2**
Water Soluble Vitamins	**2**
Fat soluble vitamins	**2**
Amino Acids Structure	**2**
DNA Replication	**2**
Molecular biology Transcription	**2**
Molecular biology Translation	**2**
Molecular biology Repair mechanisms	**2**
Molecular biology Regulation of gene expression	**2**
Metabolism of carbohydrates	**6**
Metabolism of amino acids and other nitrogen compounds	**4**

Metabolism of non-protein nitrogen compounds	**4**
Clinical Enzymology	**2**
Metabolism of lipids and lipoproteins	**6**
Total hours	**72**

Biochemistry (practical) subjects

Session Title	***Hrs.***
Titration	**2**
Carbohydrates	**2**
AminoAcides	**2**
Enzymes	**2**
Spectrophotometer	**2**
DNA Extraction	**2**
Chromatography	**2**
FlamePhotometery	**2**
Osmose	**2**
Total hours	**18**

Course Name: Anatomical Sciences I
Number of Credits: 3.0 (theory) – 1.0 (practical)
Course Type: Theoretical and Practical

General Aims and Description:

This is a lecture and laboratory course that examines the microanatomy of cells, tissues, and organs. Lectures illustrate the microstructure of major tissues and organs in relation to their function. Laboratory exercises use the light microscope to study these components and make use of slides and electron micrographs for review and discussion. This lab-oriented program presents the molecular biology and histology of normal cells, tissues, and organ systems at various developmental functional stages. Students learn how individual cell functions interact with one another and how such interactions are accomplished from the tissue levels to the organ levels. The course introduces molecular and control systems and prepares students for an understanding of normal (homeostasis) systems and pathological conditions. In addition, students learn how molecular building blocks are utilized for growth and differentiation, wound healing and tissue repair, defense mechanisms, and transfer of hereditary characters.

References

1. ***Junqueira's Basic Histology***. *McGraw-Hill Medical 2010; 12th edition; chapters 4-10 and 12-13 and 18*
2. ***Langman's Medical Embryology***. *Lippincott Williams & Wilkins 2012, 12th edition; chapters 2-9, pages 10-129*
3. ***Guyton and Hall Textbook of Medical Physiology***. *Saunders 2011, 12th edition, chapters 6, 7, 8*
4. ***Ganong's Review of Medical Physiology***. *McGraw-Hill Medical 2009; 23rd edition*

Anatomical Sciences I (theory) subjects

Session Title	*Hrs.*
Epithelial Tissue	**2**
Connective Tissue	**2**
Types of Connective and Adipose Tissue	**2**
Cartilage Tissue and Joints	**2**
Osseous Tissue and Ossification	**2**
Blood and Hematopoiesis	**2**
Muscular Tissue	**2**
Nervous Tissue	**4**
Skin	**2**
Introduction to Embryology	**2**
Gametogenesis	**2**
Ovulation and Fertilization	**2**
Embryonic Period	**2**
1st and 2nd Weeks of Embryonic Period	**2**
3rd Weeks of Embryonic Period	**2**
Fetal Period	**2**
Placenta and Fetal Membranes	**2**
Congenital Malformations	**2**
Osteology and Joints	**6**
Muscles	**4**
Circulatory System	**2**
Nervous System	**4**
Digestive System	**4**
Respiratory System	**4**

Urogenital System	**4**
Endocrine System	**2**
Total hours	**68**

Anatomical Sciences I (practical) subjects

Session Title	***Hrs.***
Microscopes	**2**
Epithelial Tissue	**2**
Connective and Osseous Tissue	**2**
Blood smears and cell differentiation	**2**
Cartilage Tissue	**2**
Muscular Tissue	**2**
Nervous Tissue	**2**
Skin	**2**
Respiratory system Tissue	**2**
Digestive system Tissue	**2**
Urogenital system Tissue	**2**
Endocrine system Tissue	**1**
Bones of the Vertebral Column, Ribs, and Sternum	**2**
Upper and Lower osteology and Limbs	**4**
Total hours	**16**

Course Name: Anatomical Sciences II
Number of Credits: 2.0 (theory) – 1.0 (practical)
Course Type: Theoretical and Practical

General Aims and Description:

Identifying key events and stages in development of head and neck system structures (anatomy, histology, and embryology). Summarizing the main structures and functions within the major divisions of the normal nervous system: the brain, spinal cord, and peripheral nervous system along with histology of head and neck. Describing how regional nervous system structures interact to perform specific functions. Locating nervous system dysfunction based on common neurological syndromes. Synthesizing vascular anatomy and neuroanatomy to locate dysfunction in ischemic stroke syndromes. Exhibiting critical thinking, effective communication, problem solving, and interpersonal skills to contribute to a high-performance team. Providing constructive feedback to peers and use peer feedback to identify and improve strengths and limitations in skills and attitudes.

References

1. ***Langman's Medical Embryology***. *Lippincott Williams & Wilkins 2021, 11th edition*
   · chapter 17, pages 260-286
   · Chapter 10, pages 133-142
   · Chapter 19, pages 321-328
   · Chapter 20, pages 329-338

Anatomical Sciences II (theory) subjects

Session Title	*Hrs.*
Overview of Skull and Osteology	**8**
Sinuses and Fontanelles	**2**
Carotid Triangle	**2**
Posterior Triangle	**2**
Suprahyoid and Prevertebral Region	**2**
Infrahyoid Region	**2**
Face (Muscles, Parotid Gland)	**2**
Scalp, Temporal and Infratemporal Region	**2**
Oral and Nasal Cavity	**2**
Pharynx, Lymph Nodes of Head and Neck	**2**
Embryology of Head and Neck 7 Jaw and Tooth	**4**
Oral Mucosa and Special Mucosa and Salivary Glands	**4**
Tooth Enamel and Dentin and Cementum	**6**
Dental Pulp and Periodontal Ligament	**2**
Larynx and Pharynx Histology	**2**
Thyroid and Parathyroid Histology	**2**
Total hours	**46**

Anatomical Sciences II (practical) subjects

Session Title	*Hrs.*

Skull Osteology	**6**
Carotid Triangle	**2**
Posterior Triangle	**2**
Face (Muscles, Parotid Gland)	**2**
Temporal and Infratemporal Region	**2**
Applied Anatomy of head and Neck	**4**
Histology of Anatomical Sciences II	**14**
Total hours	**32**

Course Name: Anatomical Sciences III
Number of Credits: 1.0 (theory) – 1.0 (practical)
Course Type: Theoretical and Practical

General Aims and Description:

This required system-based block integrates the basic sciences into a study of neuroscience and behavior in both health and sickness. Each of the basic science topics is incorporated into an integrated body of knowledge covering neuroanatomy, neurophysiology, neurological correlations, neuropharmacology, neuropathology, human behavior and psychiatry, utilizing both didactic and self-directed learning methods and clinical models.

References

1. ***Snell Clinical neuroanatomy***
2. ***Junqueira's Basic Histology***. *McGraw-Hill Medical 2010; 12th edition,*
3. *· chapter 9, pages 152-158*
4. ***Langman's Medical Embryology***. *Lippincott Williams & Wilkins 2012, 12th edition,*
5. *· chapter 18, pages 287-320*
6. ***Guyton and Hall Textbook of Medical Physiology***. *Saunders 2011, 12th edition*
   · Chapters 45-48
   · Chapters 54-60

Anatomical Sciences III (practical) subjects

Session Title	*Hrs.*
Anatomy of the vertebral canal and spinal cord	**2**
Spinal cord and spinal nerves	**2**
Autonomic nervous system and the body dermatome	**2**
Brainstem and cerebellum	**2**
Dyansfal and the cerebral hemispheres	**2**
Vessels and membranes of the brain and cranial nerves	**2**
Applied anatomy of the brain vessels, blinds and sinus ***Cranial venous***	**2**
Histology of the spinal cord, cerebellum, cerebral cortex and nerve tissue	**2**

Investigating the neural reflex	**2**
Two-point discrimination	**2**
Total hours	**20**

Anatomical Sciences III (theory) subjects

Session Title	***Hrs.***
Division of the nervous system and spinal cord appearance	**2**
The internal structure of the spinal cord	**2**
Medulla oblongata	**2**
Pons	**2**
Midbrain	**2**
Cerebellum	**2**
Diencephalon	**2**
Cerebral hemispheres	**2**
The cerebral hemispheres and basal Nuclei	**2**
Limbic system and reticular formation	**2**
Vessels and Meninges	**2**
The structure of cranial nerves	**2**
Embryology of Nervous system	**2**
Radiological and clinical anatomy of brain and spinal cord	**2**
Total hours	**28**

Course Name: Medical Microbiology
Number of Credits: 3.0 (theory) – 1.0 (practical)
Course Type: Theoretical and Practical

General Aims:

Learning the principles of microbiology, including the structural and physiological properties of microorganisms and their roles in diseases and the methods to control them.

1. Classification of pathogens
2. Treatment of bacterial diseases
3. Familiarizing students with the structure of microorganisms, staining, lam preparation

Learning Outcomes

Students must:

1. Know microbial and physiological principles.
2. Know the methods and problems of microorganism classification.
3. Know pathogenic and epidemiological mechanisms.
4. Know antiseptic effect mechanisms.
5. Know control methods the mechanisms of antibiotic effects.
6. know the methods to determine the effect mechanisms of antibiotics.
7. Be able to explain the relationship between dosage, parasite and the drug.
8. Know protection methods while working with microorganisms.
9. Know methods to work with microorganisms, microscope use, and microscopic and macroscopic identification of microorganisms.
10. Be able to do cell culture and perform identification experiments.
11. Perform antibiogram tests and know and examine antibiotic effects.
12. Know microbiology lab equipment.
13. Know staining methods.
14. Be able to prepare culture medium.
15. Know microorganism identification methods.

Course Name: Immunology
Number of Credits: 2.5 (theory) – 0.5 (practical)
Course Type: Theoretical and Practical

General Aims:

Familiarizing students with the science of immunology and its use in understanding, preventing, diagnosis, and treatment of disease.

The functions of the immune system and body defense mechanisms, different body organs which have significant roles in the functions of the immune system and the different types of immunity in body will be covered. Moreover, the aim of the practical credits is familiarizing students with different lab equipment and diagnostic testing kits and their use.

Learning Outcomes

Students must:

1. Know pathogens and immunologic mechanism of diseases.
2. Know resistance against diseases.
3. Know lab diagnosis methods.
4. Know immunologic substances used to cure diseases.

Course Name: Medical Genetics

Number of Credits: 2.0 (theory)
Course Type: Theoretical

General Aims

The increasing impact of genetics in healthcare and the development of newer sophisticated technologies require close collaboration between research scientists, clinical laboratory scientists, and clinicians to deliver a high quality service to patients. The Medical Genetics course covers basic concepts of genetic disorders and the clinical genetics service, including risk analysis and application of modern genetic and genomic technologies in medical genetics research and in diagnostics and population screening.

Learning Outcomes

Students must:

1. Know the History and Significance of Medical Genetics in the clinic.
2. Know the Genetics of Metabolic, Neurologic and Musculoskeletal Disorders.
3. Know Population Genetics and Medicine.
4. Know Modern Molecular Medicine-Gene Therapy.

Course Name: Psychology
Number of Credits: 2.0 (theory)
Course Type: Theoretical

General Aims

Knowing the basic principles of psychology, different senses, and thought processes is central to building a more effective relationship between the pharmacist and the patient and therefore this course will increase the knowledge of the pharmacist and familiarizing students with the principles of psychology and learning methods, thought processes, and perception.

Learning Outcomes

Students must:

1. Know the relationship between psychology and human mind and soul.
2. Know the principles of psychology.
3. Be able to explain different sense stages.
4. Know learning methods and thought processes.
5. Know human motivation.
6. Know psychological health.
7. Know the physiological principles of psychology.