

Al-Nahrain University  
College of Pharmacy  
Clinical Laboratory Science Dept.

Republic of Iraq  
Ministry of Higher Education and Scientific Research  
2021-2022



Title of the course: Practical Human Anatomy  
Level: 1<sup>st</sup> Year, 2<sup>nd</sup> Semester

Objectives:

- 1-To study the histological and anatomical structure of human body.
- 2- It is meant primarily to give the student a foundation for advanced study in health care, physiology, pathology, and other fields related to health and fitness.
- 3- At the end of the course, the student should be familiar with gross anatomical and the histological description of human body.

NO.	Subject	Hours	Lecturer	Date
1	Respiratory System: Trachea; Lung	2	Professor. Dr. Haider Abdul Rassol	Thursday
2	Urinary System: Kidney; Urinary bladder	2	Professor. Dr. Haider Abdul Rassol	Thursday
3	Circulatory System: Arteries and Veins	2	Professor. Dr. Haider Abdul Rassol	Thursday
4	Lymphatic System: Thymus Gland; Spleen	2	Professor. Dr. Haider Abdul Rassol	Thursday
5	Digestive System: Tongue; Esophagus; Stomach	2	Professor. Dr. Haider Abdul Rassol	Thursday
6	Digestive System: Small intestine; Large intestine	2	Professor. Dr. Haider Abdul Rassol	Thursday
7	Mid-Term Theory Exam	-	-----	

8	Digestive System: Accessory glands of the digestive system (Liver and Pancreas)	2	Professor. Dr. Haider Abdul Rassol	Thursday
9	Male Reproductive System: Testes; Prostate Gland	2	Professor. Dr. Haider Abdul Rassol	Thursday
10	Female Reproductive System: Ovary; Uterus	2	Professor. Dr. Haider Abdul Rassol	Thursday
11	-Endocrine System: Pituitary gland; Thyroid gland -Endocrine System: Adrenal gland; Pineal Gland	2	Professor. Dr. Haider Abdul Rassol	Thursday
12	Skin: Thick skin; Thin skin	2	Professor. Dr. Haider Abdul Rassol	Thursday
13	Nervous System: Cerebral cortex; Cerebrum cortex	2	Professor. Dr. Haider Abdul Rassol	Thursday
14	Nervous System: Spinal cord	2	Professor. Dr. Haider Abdul Rassol	Thursday
15	Final Lab. Exam	2	Professor. Dr. Haider Abdul Rassol	Thursday

Grading System: Lab. Exam (25%).

Reference book: Lab manual for Practical Anatomy Adopted by the Department.

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Title of the course: Practical Histology  
Level: 1<sup>st</sup> Year, 2<sup>nd</sup> Semester

Objectives:

- 1-To study the histological and anatomical structure of human body.
- 2- It is meant primarily to give the student a foundation for advanced study in health care, physiology, pathology, and other fields related to health and fitness.
- 3- At the end of the course, the student should be familiar with gross anatomical and the histological description of human body.

NO.	Subject	Hours	Lecturer	Date
1	Respiratory System: Trachea; Lung	2	Lecturer M.Sc. Zeina Saif Al-Dein	Sunday
2	Urinary System: Kidney; Urinary bladder	2	Lecturer M.Sc. Zeina Saif Al-Dein	Sunday
3	Circulatory System: Arteries and Veins	2	Lecturer M.Sc. Zeina Saif Al-Dein	Sunday
4	Lymphatic System: Thymus Gland; Spleen	2	Lecturer M.Sc. Zeina Saif Al-Dein	Sunday
5	Digestive System: Tongue; Esophagus; Stomach	2	Lecturer M.Sc. Zeina Saif Al-Dein	Sunday
6	Digestive System: Small intestine; Large intestine	2	Lecturer M.Sc. Zeina Saif Al-Dein	Sunday
7	Mid-Term Theory Exam	-	-----	

8	Digestive System: Accessory glands of the digestive system (Liver and Pancreas)	2	Lecturer M.Sc. Zeina Saif Al-Dein	Sunday
9	Male Reproductive System: Testes; Prostate Gland	2	Lecturer M.Sc. Zeina Saif Al-Dein	Sunday
10	Female Reproductive System: Ovary; Uterus	2	Lecturer M.Sc. Zeina Saif Al-Dein	Sunday
11	-Endocrine System: Pituitary gland; Thyroid gland -Endocrine System: Adrenal gland; Pineal Gland	2	Lecturer M.Sc. Zeina Saif Al-Dein	Sunday
12	Skin: Thick skin; Thin skin	2	Lecturer M.Sc. Zeina Saif Al-Dein	Sunday
13	Nervous System: Cerebral cortex; Cerebrum cortex	2	Lecturer M.Sc. Zeina Saif Al-Dein	Sunday
14	Nervous System: Spinal cord	2	Lecturer M.Sc. Zeina Saif Al-Dein	Sunday
15	Final Lab. Exam	2	Lecturer M.Sc. Zeina Saif Al-Dein	Sunday

Grading System: Lab. Exam (25%).

Reference book: Lab manual for Practical Histology Adopted by the Department.

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Title of the course: Practical Medical Physics  
Level: 1<sup>st</sup> Year, 2<sup>nd</sup> Semester

Objectives:

- 1-Gives students the ability to deal with the concepts of physics emphasizes the knowledge and skills required to efficiently discharge the duties and responsibilities of the pharmacist.
- 2-The course deals with the concept of basic physics and application of physics in the medical field.
- 3-Upon completion of the course the students will be able to understand the physical terminology and abbreviation used to describe the lecture, and the application in medical field.

N O.	Subject	Hours	Lecturer	Date
1	Explain how to plot graph and make laboratory report	2	Lecturer Dr. Hawraa Hashim	Monday
2	Optical Fiber Loss (bend) Measurement	2	Lecturer Dr. Hawraa Hashim	Monday
3	Simple pendulum	2	Lecturer Dr. Hawraa Hashim	Monday
4	Spectral photometric	2	Lecturer Dr. Hawraa Hashim	Monday
5	Density of liquid	2	Lecturer Dr. Hawraa Hashim	Monday
6	The focal length of convex lens	2	Lecturer Dr. Hawraa Hashim	Monday
7	Mid-Term Theory Exam	-	-----	

8	Measurement of Viscosity of liquids	2	Lecturer Dr. Hawraa Hashim	Monday
9	Ostwald's Viscometer: find viscosity of unknown; find the molecular weight; find concentration of unknown substance	2	Lecturer Dr. Hawraa Hashim	Monday
10	Measuring surface tension (by capillary rise method and traveling microscope).	2	Lecturer Dr. Hawraa Hashim	Monday
11	Measuring surface tension (differential height capillary method).	2	Lecturer Dr. Hawraa Hashim	Monday
12	Decay curve and half-life	2	Lecturer Dr. Hawraa Hashim	Monday
13	Boyle's Law. 2	2	Lecturer Dr. Hawraa Hashim	Monday
14	Speed of sound	2	Lecturer Dr. Hawraa Hashim	Monday
15	Laser application for measurement of single slit	2	Lecturer Dr. Hawraa Hashim	Monday
16	Final Lab. Exam	2	Lecturer Dr. Hawraa Hashim	Monday

Grading System: Lab. Exam (25%).

Reference book: Lab Manual for Practical Physics Adopted by the Department

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Title of the course: Practical Computer Science  
Level: 1st Year, 2<sup>nd</sup> Semester

NO.	subject	hours	Lecturer	Date
1	Introduction to Microsoft Excel and Google Sheet	2	M.Sc. Saja Hashim	Saturday
2	Introduction to Microsoft Excel and Google Sheet	2	M.Sc. Saja Hashim	Saturday
3	Introduction to Microsoft Excel and Google Sheet	2	M.Sc. Saja Hashim	Saturday
4	Introduction to Microsoft Excel and Google Sheet	2	M.Sc. Saja Hashim	Saturday
5	Introduction to Microsoft Excel and Google Sheet	2	M.Sc. Saja Hashim	Saturday
6	Introduction to Microsoft Excel and Google Sheet	2	M.Sc. Saja Hashim	Saturday
7	Introduction to Microsoft Excel and Google Sheet	2	M.Sc. Saja Hashim	Saturday
8	Introduction to Microsoft Excel and Google Sheet	2	M.Sc. Saja Hashim	Saturday
9	Mid-term Electronic Exam	1	M.Sc. Saja Hashim	Saturday
10	Mid-term Theory Exam	-	-----	Saturday
11	Introduction to Microsoft Excel and Google Sheet	2	M.Sc. Saja Hashim	Saturday
12	Introduction to Microsoft Excel and Google Sheet	2	M.Sc. Saja Hashim	Saturday
13	Introduction to Microsoft Excel and Google Sheet	2	M.Sc. Saja Hashim	Saturday
14	Final Electronic Exam	2	M.Sc. Saja Hashim	Saturday

Grading System: Mid-Term Lab. Exam (50%), Final Lab. Exam(50%). Reference book: استمارة وصف البرنامج الاكاديمي لكليات الصيدلة

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Title of the course: Practical Medical Microbiology II  
Level: 2<sup>nd</sup> Year, 2<sup>nd</sup> Semester

Objectives:

To provide the student with knowledge of the pathogenesis, morphology laboratory diagnosis, identification, pathology and clinical features of medically important parasitic and viral diseases and the basic concepts of immunizing procedure against these diseases.

NO.	Subject	hours	Lecturer	Date
1	Virus definition and structure, difference between virus and bacteria	2	Assist Lecturer. Rafal Nazar	Monday
2	Virus isolation a tissue culture -tissue culture -embryo egg -animal inoculation	2	Assist Lecturer. Rafal Nazar	Monday
3	-Detection of virus by ELISA,PCR -Bacteriophage	2	Assist Lecturer. Rafal Nazar	Monday
4	-Introduction and classification of the human parasites -Intestinal protozoa: <i>Entamoebahistolytica</i> -Commensal amoeba; <i>Entamoeba coli</i> ; <i>Endolimax nana</i> <i>Iodomoebabuetschillii</i>	2	Assist Lecturer. Rafal Nazar	Monday
5	-Flagellate of digestive tract: <i>Giardia lamblia</i> ; <i>Chilomastixmesenil</i>	2	Assist Lecturer. Rafal Nazar	Monday



	-Flagellate of genital organs: <i>Trichomonas vaginalis</i> ; ;Ciliate protozoa <i>Balantidium coli</i>			
6	Mid-term Theory Exam	-	-----	
7	-Flagellate of blood and tissues: <i>Leishmania donovani</i> ; <i>Leishmania tropica</i> -Trypanosoma <i>gambiense</i> ; <i>Trypanosoma rhodesiense</i> ; <i>Trypanosoma cruzi</i>	2	Assist Lecturer. Raghad Khadum	Monday
8	Malarial parasite: Life cycle of <i>Plasmodium</i> species; ; <i>Plasmodium vivax</i> <i>Plasmodium falciparum</i>	2	Assist Lecturer. Raghad Khadum	Monday
9	<i>Plasmodium malariae</i> ; <i>Plasmodium ovale</i>	2	Assist Lecturer. Raghad Khadum	Monday
10	<i>Toxoplasma gondii</i> ; Cestoidea; <i>Taenia saginata</i> ; <i>Taenia solium</i>	2	Assist Lecturer. Raghad Khadum	Monday
11	<i>Hymenolepis nana</i> ; <i>Echinococcus granulosus</i> ; <i>Echinococcus multilocularis</i>	2	Assist Lecturer. Raghad Khadum	Monday
12	Trematoda: Life cycle of <i>Schistosoma</i> species; ; <i>Schistosoma japonicum</i> <i>Schistosoma mansoni</i> ; <i>Schistosoma haematobium</i>	2	Assist Lecturer. Raghad Khadum	Monday
13	Nematoda: <i>Trichostrongylus axei</i> ; <i>Enterobius vermicularis</i>	2	Assist Lecturer. Raghad Khadum	Monday
14	<i>Ascaris lumbricoides</i> ; <i>Ancylostoma duodenale</i>	2	Assist Lecturer. Raghad Khadum	Monday
15	Methods of diagnosis of parasite	2	Assist Lecturer. Raghad Khadum	Monday
16	Final Lab. Exam	2	Assist Lecturer. Raghad Khadum Assist Lecturer. Rafal Nazar	Monday

Grading System: Lab. Exam (25%). Reference book: Lab Manual for Practical Medical Microbiology Adopted by the Department.

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Title of the course: Practical Computer Science  
Level: 2<sup>nd</sup> Year, 1<sup>st</sup> Semester

NO.	subject	hours	Lecturer	Date
1	SPSS مقدمة	2	M.Sc. Saja Hashim	Saturday
2	وصف عام : SPSS الايجازات , الدوال , القوائم ,	2	M.Sc. Saja Hashim	Saturday
3	تعريف المتغيرات	2	M.Sc. Saja Hashim	Saturday
4	الاحصاءات الوصفية- الجداول التكرارية-	2	M.Sc. Saja Hashim	Saturday
5	الرسوم البيانية	2	M.Sc. Saja Hashim	Saturday
6	المعدل	2	M.Sc. Saja Hashim	Saturday
7	T-Test اختبار	2	M.Sc. Saja Hashim	Saturday
8	Mid-term Electronic Lab. Exam	1	M.Sc. Saja Hashim	Saturday
9	Mid-term Theory Exam	-	-----	

11	اختبار أنوفا باتجاه واحد	2	M.Sc. Saja Hashim	Saturday
12	اختبارات غير حدودي	2	M.Sc. Saja Hashim	Saturday
13	اختبارات طبيعية	2	M.Sc. Saja Hashim	Saturday
14	الارتباط والانحدار - الارتباط الخطي والانحدار - الانحدار المتعدد الخطي -	2	M.Sc. Saja Hashim	Saturday
15	تحليل متعدد التغيرات - اختبار Chi Square -	2	M.Sc. Saja Hashim	Saturday
17	Final Electronic Lab. Exam	2	M.Sc. Saja Hashim	Saturday

Grading System: Mid-Term Lab. Exam (50%), Final Lab. Exam(50%).

Reference book: استمارة وصف البرنامج الاكاديمي لكليات الصيدلة

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Title of the course: Practical Biochemistry I  
Level: 3<sup>rd</sup> Year, 2<sup>nd</sup> Semester

Objectives:

To provide a condensed curriculum of strong basic biochemistry and molecular biology. At the end of the semester the students should be able to understand all metabolic processes occurring in the living cell.

NO.	Subject	hours	Lecturer	Date
1	General urine examination: Physical properties	2	M.Sc. Ghufran Mohammed, M.Sc. Weam Fadil	Sunday
2	General urine examination: Chemical properties; Protein in urine; Sugar in urine	2	M.Sc. Ghufran Mohammed, M.Sc. Weam Fadil	Sunday
3	Ketone bodies in urine (Rothera test); Bile salts in urine (Hays test); Bilirubin in urine.	2	M.Sc. Ghufran Mohammed, M.Sc. Weam Fadil	Sunday
4	General urine examination: Evaluation of unknown urine sample	2	M.Sc. Ghufran Mohammed, M.Sc. Weam Fadil	Sunday
5	Cerebrospinal fluid analysis: Measurement of glucose in CSF	2	M.Sc. Ghufran Mohammed, M.Sc. Weam Fadil	Sunday

6	Cerebrospinal fluid analysis: Measurement of chloride, protein in CSF	2	M.Sc. Ghufran Mohammed, M.Sc. Weam Fadil	Sunday
7	Serum calcium measurement	2	M.Sc. Ghufran Mohammed, M.Sc. Weam Fadil	Sunday
8	Mid-term Theory Exam	-	-----	
9	Blood phosphorus measurement (inorganic phosphate)	2	M.Sc. Ghufran Mohammed, M.Sc. Weam Fadil	Sunday
10	Serum total proteins (quantitative analysis)	2	M.Sc. Ghufran Mohammed, M.Sc. Weam Fadil	Sunday
11	Estimation of urea level in the blood	2	M.Sc. Ghufran Mohammed, M.Sc. Weam Fadil	Sunday
12	Measurement of serum uric acid level	2	M.Sc. Ghufran Mohammed, M.Sc. Weam Fadil	Sunday
13	Measurement of serum ascorbic acid level	2	M.Sc. Ghufran Mohammed, M.Sc. Weam Fadil	Sunday
14	Gastric juice analysis: Detection of free hydrochloric acid concentration	2	M.Sc. Ghufran Mohammed, M.Sc. Weam Fadil	Sunday
15	Gastric juice analysis: detection of free acid, total acid content	2	M.Sc. Ghufran Mohammed, M.Sc. Weam Fadil	Sunday
16	Final Lab. Exam	2	M.Sc. Ghufran Mohammed, M.Sc. Weam Fadil	Sunday

Grading System: Lab. Exam (25%). Reference book: Lab Manual for Practical Biochemistry II Adopted by the Department.

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Title of the course: Clinical Laboratory Training  
Level: 5<sup>th</sup> Year, 2<sup>nd</sup> Semester

Objectives:

- 1-To provide general information about the biochemical basis of diseases and the principles of laboratory diagnosis.
- 2-It supplies specific guidance on the clinical value of chemical investigations, indicating their range of application and limitations as well as relating results of laboratory tests to the process of clinical diagnosis and management as these might be applied to individual patients

NO.	subject	hours	Lecturer	Date
1	-Diagnostic test basics, collecting & transporting specimens, venipuncture, urine specimen, stool specimen -Biochemical tests: Fasting blood glucose, Post-prandial glucose, Oral glucose tolerance test	2	Assistance Lecturer Raghada Abdul Monum, M.Sc. Ghufran Mohammed	Monday
2	-Blood urea, Blood creatinine, Creatinine clearance, Uric acid -Cholesterol, Lipoproteins, triglycerides	2	Assistance Lecturer Raghada Abdul Monum, M.Sc. Ghufran Mohammed	Monday
3	- Blood proteins, Bilirubin - Calcium, Inorganic phosphate, Serum chloride	2	Assistance Lecturer Raghada Abdul Monum, M.Sc. Ghufran Mohammed	Monday

4	Alkaline phosphatase, Acid phosphatase, Alanine amiotransferase, Aspartate aminotransferase, Lactate dehydrogenase, Creatine phosphokinas	2	Assistance Lecturer Raghada Abdul Monum, M.Sc. Ghufran Mohammed	Monday
5	Serological tests: VDRL, ASO-Titer, Hepatitis tests	2	Assistance Lecturer Raghada Abdul Monum, M.Sc. Ghufran Mohammed	Monday
6	C-reactive protein test, Rheumatic factor test, Rosebengal test, Typhoid fever test( Widal test), Pregnancy Test	2	Assistance Lecturer Raghada Abdul Monum, M.Sc. Ghufran Mohammed	Monday
7	Hematological tests: RBC count, Hb, PCV, RBC indices, WBC ,count, Platelets count	2	Assistance Lecturer Raghada Abdul Monum, M.Sc. Ghufran Mohammed	Monday
8	Mid-term Theory Exam	-	-----	
9	Blood typing, Coombs test, Bleeding time, ESR	2	Assistance Lecturer Raghada Abdul Monum, M.Sc. Ghufran Mohammed	Monday
10	Microbiological tests: culture and sensitivity tests, Staining methods	2	Assistance Lecturer Raghada Abdul Monum, M.Sc. Ghufran Mohammed	Monday
11	Culture media, Enriched culture media for general use	2	Assistance Lecturer Raghada Abdul Monum, M.Sc. Ghufran Mohammed	Monday
12	Tests for identification of bacteria, Disk diffusion tests of sensitivity to antibiotics, Choice of drugs for disk test, bacterial disease and their laboratory diagnosis.	2	Assistance Lecturer Raghada Abdul Monum, M.Sc. Ghufran Mohammed	Monday

13	Spectrophotometer and Auto analyzer with quality control for Biochemistry and Hormones	2	Assistance Lecturer Raghada Abdul Monum, M.Sc. Ghufran Mohammed	Monday
14	Elisa technique for Serology, Immunity and Virology IgG and IgM	2	Assistance Lecturer Raghada Abdul Monum, M.Sc. Ghufran Mohammed	Monday
15	Hb. Electrophoresis in Blood (HbA <sub>1</sub> C) and immunoglobulin's electrophoresis in serum technique	2	Assistance Lecturer Raghada Abdul Monum, M.Sc. Ghufran Mohammed	Monday
16	Final Lab. Exam	2	Assistance Lecturer Raghada Abdul Monum, M.Sc. Ghufran Mohammed	Monday

Grading System: Lab. Exam (50%), Final Lab. Exam(50%).

Reference book: Manual for Laboratory Training Adopted by the Department