

وزارة التعليم العالي والبحث العلمي

جامعة الفرات الاوسط التقنية

كلية البوليتكنك / كربلاء

قسم تقنيات المختبرات الطبية

مفردات المناهج للتخصصات
الطبية
قسم تقنيات المختبرات الطبية

اعداد اللجنة العلمية في قسم تقنيات المختبرات الطبية

كلية البوليتكنك / كربلاء

2024/2023

وزارة التعليم العالي والبحث العلمي
جامعة الفرات الاوسط التقنية
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القسم: تقنيات المختبرات الطبية
النظام الدراسي : فصلي

الخطة الدراسية
السنة الاولى / الفصل الدراسي الاول
عدد الوحدات للفصل الاول = 32

ت	المادة	عدد الساعات			عدد الوحدات	نوع المادة	الملاحظات
		ن	ع	م			
1	تقنيات مختبرية Laboratory Techniques	2	4	6	6	تخصصية	اللغة الانكليزية
2	تحضيرات مجهرية Microbial preparation	2	3	5	5	تخصصية	اللغة الانكليزية
3	أجهزة مختبرية Laboratory Instrument	2	2	4	4	تخصصية	اللغة الانكليزية
4	علم الانسجة Histology	2	3	5	5	تخصصية	اللغة الانكليزية
5	كيمياء تحليلية Analytical Chemistry	2	4	6	6	تخصصية	اللغة الانكليزية
6	أساسيات تمريض Fundamentals of Nursing	1	2	3	3	مساعدة	اللغة الانكليزية
7	تطبيقات الحاسبة Computer application	1	2	3	3	مساعدة	اللغة العربية
المجموع	الفصل الاول	12	20	32	32		

السنة الاولى / الفصل الدراسي الثاني
عدد الوحدات للفصل الاول = 31

ت	المادة	عدد الساعات			عدد الوحدات	نوع المادة	الملاحظات
		ن	ع	م			
1	سيطرة نوعية Quality control	2	4	6	6	تخصصية	اللغة الانكليزية
2	شرائح نسيجية Histological techniques	2	3	5	5	تخصصية	اللغة الانكليزية
3	علم الاحياء الجزيئي Molecular biology	2	2	4	4	تخصصية	اللغة الانكليزية
4	سلامة مختبرية Lab. Safety	1	2	3	3	تخصصية	اللغة الانكليزية
5	نقل الدم Blood transfusion	1	2	3	3	تخصصية	اللغة الانكليزية
6	كيمياء حيائية Biochemistry	2	4	6	6	تخصصية	اللغة الانكليزية
7	حقوق الانسان والديموقراطية Human right and Democratic	2	-	2	2	مساعدة	اللغة العربية
8	اللغة الانكليزية English language	2	-	2	2	مساعدة	
المجموع	الفصل الاول	14	17	31	31		

المرحلة الثانية

الفصل الدراسي الاول

ت	المادة	عدد الساعات			عدد الوحدات	نوع المادة	الملاحظات
		ن	ع	م			
1	علم الاحياء المجهرية Microbiology	2	4	6	6	تخصصية	اللغة الانكليزية
2	امراض الدم / 1 Haematology\1	2	4	6	6	تخصصية	اللغة الانكليزية
3	كيمياء سريرية 1 Clinical chemistry\1	2	4	6	6	تخصصية	اللغة الانكليزية
4	علم المناعة Immunology	2	4	6	6	تخصصية	اللغة الانكليزية
5	طفيليات ابتدائية Protozoa	2	4	6	6	تخصصية	اللغة الانكليزية
6	فايروسات Virology	1	2	3	3	تخصصية	اللغة الانكليزية
7	سلوك مهني Medical Ethics	2	-	2	2	مساعدة	اللغة العربية
المجموع	الفصل الاول	13	22	35	35		

الفصل الدراسي الثاني

ت	المادة	عدد الساعات			عدد الوحدات	نوع المادة	الملاحظات
		ن	ع	م			
1	بكتريا مرضية Bacterial Pathogenicity	2	4	6	6	تخصصية	اللغة الانكليزية
2	امراض الدم 2 Hematology\2	2	4	6	6	تخصصية	اللغة الانكليزية
3	كيمياء سريرية 2 Clinical chemistry\2	2	4	6	6	تخصصية	اللغة الانكليزية
4	مناعة سريرية Immunology	2	4	6	6	تخصصية	اللغة الانكليزية
5	ديدان طفيلية Helminthes	2	4	6	6	تخصصية	اللغة الانكليزية
6	فطريات طبية Medical Mycology	1	2	3	3	تخصصية	اللغة الانكليزية
7	مشروع بحث Graduation project	-	2	2	2	مساعدة	اللغة الانكليزية
المجموع	الفصل الاول	11	24	35	35		

Name of COURSE	the year	weekly hours			
laboratory Techniques تقنيات مختبرية	first	theory	practical	Total	Units
		2	4	6	6
Language teaching / English	book systematic				

The objectives of Article:

General:

To identify the general concepts of medical Lab. Techniques that are needed to work in medical Lab.

Syllabus (Theory)

Week	Details
1-3	Introduction to Medical lab. Techniques includes - Identify the various laboratory glasses and how to deal with laboratory methods. - Sterilization. Identify ways of cleaning, sterilization and disinfectant by physical, chemical and mechanical means. Identify different sterilization equipment and materials used in chemical sterilization. A full review of the basic techniques that use in the diagnosis of bacteria, blood, and clinical chemistry. - Laboratory safety and how to avoid accidents and errors that are inadvertently laboratory in a laboratory (first aid, biochemical hazards, and biological hazards), and biological and chemical safety.
4	Samples collection and handling. - Samples collection for different lab. Investigations, samples transport, samples preparation.
5	Culturing of microorganism :- types of Culture media, different samples used for culture, bacterial growth curve, MO characterization (chemical tests for MO identification)
6	Urine samples: Urine formation, Properties of urine, chemical and physical investigations, microscopic examination.
7	Stool sample: formation, properties, culture, general examination.
8	Seminal Fluid: Formation, organs of reproductive tract, characterization of semen fluid, investigations that used on seminal fluid, seminal fluid examination, fructose test, antisperm antibody (serum and semen). Total sperm count in Neubauer chamber. Types of normal and abnormal of Sperms character with study the way of writing the final report.
9	Agglutination techniques
10	Advance techniques

	-Enzyme-linked immunosorbent assay (ELISA) principle, applications
11	Radioimmunoassay (RIA) principle, applications
12	Immunofluorescence technique
13	Polymerase chain reaction (PCR), types principle, applications
14	Real-time PCR
15	Review

Syllabus (Practice)

Week	Details
1-3	Introduction on the subject of medical laboratory techniques. - Glassware and materials used in some tests. Disinfection and sterilization (Chemical and physical) - biological and chemical hazards and safety
4	Samples collection and handling. - Samples collection for different lab. Investigations, samples transport, samples preparation.
5	Culturing of microorganism :- types of Culture media, preparation of culture media
6	Urine samples: Chemical and physical investigations, microscopic examination. Culture and sensitivity
7	Stool sample: General examination. Culture and sensitivity
8	Seminal Fluid: Seminal fluid examination Liquification time, physical examination, microscopic examination. Fructose test.
9	Heamagglutination test
10	Advance techniques -Enzyme-linked immunosorbent assay (ELISA) procedure, troubleshoot. Cutoff value, standard curve
11	Radioimmunoassay (RIA) procedure, troubleshoot.
12	Immunofluorescence technique
13	Polymerase chain reaction (PCR), types procedure, gel electrophoresis
14	Real-time PCR, procedure application in medical lab.
15	Review

Subject	Grade	Week hours		
Microbial preparation تخضيرات مجهرية	First year	Theoretical L.	Practical L.	Total
		2	3	5
Study language : English	References	Theory and practice of histological technique by Bancroft		

Purpose: - prepare slides for histopathology and cytology

A) In general:-

Students can prepare permanent slides for different body organs.

B) Specifically student can do :-

1- Permanent stained tissue slides and body fluid smears.

2- Fix and preserve tissue specimen.

Syllabus (Theory)

Weeks	Details
1	Definition of some terminology that deals with histology , cytology,... etc.
2	Sample collection, biopsy, and autopsy.
3 & 4	Steps of preparing tissue for study, fixation, fixatives.
5&6	Routine fixatives and special fixatives.
7	Washing, solution , time .
8	Dehydration , dehydrants .
9	Clearing ,clearing agents
10	Infiltration ,types of waxes .
11	blocking and trimming .
12	Microtomes, Sectioning.
13 & 14	Review
15	Final exam

Syllabus (Practice)

Weeks	Topics
1	Introduction to histological and cytological techniques .
2	Instruments , tools , glass wares .
3	Preparation of solution used .
4+5	Steps of preparing the tissues with their solutions .
6	Doing steps of preparation .
7+8	Blocking and embedding
9	Trimming .
10	Test for blocking and trimming .
11	Sectioning .
12	Sectioning and errors in sectioning .
13+14	Review
15	Final exam

Subject	Study year	No. of Hours per week		
Laboratory Instrument أجهزة مختبرية	First year	Theory	Practical	Total
		2	2	4

The objective: The student will be able to: -

- General objectives: -

Understand the principle of all instruments that used in the medical laboratories.

Theory and practice syllabus	
Weeks	Topics
1	MICROSCOPES Uses, main parts ,principle of work ,kinds, types of condensers, operation, cleaning, service and maintenance.
2	BALANCES Uses ,types of balances ,main part ,principle of operation ,operation ,service and maintenance .
3	PHOTOMETRY Introduction, Light and wave length, Beer lamberts Law, types of photometers, main parts, filters, prisms and diffraction gratings, principle of operation, operation and maintenance.
4	FLAME PHOTOMETRY Introduction , Uses ,main parts , types , atomizers ,principle of operation ,operation and maintenance.
5	ATOMIC ABSORPTION SPECTROPHOTOMETRY Introduction ,uses , types, main parts , principle of operation ,operation and maintenance.
6	CENTRIFUGES Uses , types, main parts , principle of operation ,operation and maintenance.
7	AUTOCLAVES Introduction ,uses , types, main parts , principle of operation , sterilization, operation and maintenance
8	PH METERS Uses , types, main parts ,electrodes , principle of operation ,operation and maintenance.

9	MICROTOMES Uses , types, main parts ,sharpeners , principle of operation ,operation and maintenance.
10	ELECTROPHORESIS Uses , types, main parts , principle of operation ,operation and maintenance.
11	HEATING INSTRUMENTS (WATER BATHS ,OVEN & INCUBATION) Uses , types, main parts thermostats, principle of operation ,operation and maintenance.
12	WATER PURIFICATION (DISTILLATORS & DEAIIONIZERS) Distillator ,deionizers, uses, main parts , operation and maintenance.
13	AUTOANALYZERS Introduction ,uses , types, main parts , principle of operation ,operation and maintenance.
14	Review
15	Final exam

Subject	Year study	Week hours		
		Theoretical L.	Practical L.	Total
Histology علم الأنسجة	First year	2	3	5
Study language (English)				

Aim of studying general subject :

General purpose :-

To understand the histological structure and morphology of human tissue.

Theoretical syllabus	
weeks	Syllabus (Theory and practice)
1	Shape of cell
2	Epithelial tissue –simple epith. T.
3	Epithelial tissue- Stratified epith. T.
4	Connective tissue – Loose co. t.
5	Connective tissue –dense co. t.
6	Connective tissue –the blood
7	Connective tissue –compact bone
8	External feature of digestive system
9	Urogenital system of male &female
10	Liver
11	Spleen
12	Lymph node
13	Circulatory system (Artery)
14	Circulatory system (vein)
15	Final exam

Subject	Term	Week hours		
Analytical Chemistry كيمياء تحليلية	First	Theoretical L.	Practical L.	Total
		2	4	6
Study language (English)	References	Chemistry		

Aim of subject

General aims:-

It give an general idea about organic compound and to able to make different experiment and chemical reaction .

Special aims :-

At the end of the term the student could do :-

- Use and clean laboratory equipment . -1
- Can able to act with different chemical reagents . -2
- Can able to prepare different concentration solution . -3
- Can be identify the biochemistry compound of human being by using laboratory and chemically methods . -4
- Can able to use the laboratory instrument . -5

Theoretical syllabus	
Analytical chemistry	
Lect. No.	Topics
1	Introduction to analytical chemistry Atom , elements, radio isomers pollution with radio isomers , pollution with elements . Relation between atoms, molecules ,energy, according to the new theory of atom.(Debroley equation). Matter , classification.
2	Chemical bonds, covalent ,Ionic , coordination , hydrogen. Methods of analysis . qualitative and quantitative ,statistical methods of quantitative analysis, errors in quantitative analysis .
3	Methods of expressing concentration of solution , Molar solution ,normal solution . Preparation of molar solution , dilution ,questions.
4	Percentage composition, part per million. Chemical equilibrium, ionization, constant of water (PH and POH).
5	Ionization of weak electrolyte . calculation of PH of weak acids and weak bases. Buffer solutions , classification .
6	Calculation of buffer solutions . Uses of buffer solutions.
7	Volumetric analysis , classification , standard solution , examples . Neutralization reactions .
8	Oxidation ,reduction reactions . examples.

	Precipitation reactions.
9	Theory of indicators , reaction , properties ,examples.
	Types of indicators.
	Questions ,homework
10	Principles of colorimetry .
11	Beer-lambert law .
12	Standard solution/calibration curve.
13	Instruments of colorimetry.
14	Examination.

Practical syllabus	
Lab. No.	Topics
1	Type of glassware used.
	Cleaning solutions, safety.
2	Cation analysis.
	Unknown of cations. quiz.
3	Anion analysis.
	Unknown of anions. Quiz.
5	Balance, preparation of percentage solutions.
	Completion of preparation of percentage solutions.
6	Quiz, in balance and percentage solutions.
7	Preparation of normal solution and molar solution.
8	Dilution of concentrated solution.
	Quiz, examination in dilution.
9	Buffer solutions, preparation PH.
	PH. Meter.
10	Preparation of solution of known PH.
	Quiz , unknown.
11	Volumetric analysis , acid-base. Titration. Preparation of standard borax. Solution
	Quiz, unknown .
12	Oxidation – reduction reaction. Preparation of potassium permanganate.
	Quiz, unknown.
13	Determination of ferrous ion. Percentage in copper sulphate . solution.
	Precipitation reactions.
	Quiz, unknown.
14	Colorimetry , photometers.
	Application of Beer's law.
	Quiz. Unknown
15	Practical examination
	Practical examination

Subject	Term	Week hours		
Fundamentals of Nursing اساسيات التمريض	First	Theoretical L.	Practical L.	Total
		1	2	3
Study language (English)	References	Chemistry		

اهداف المادة :-

العامية :- التعرف على اسس التمريض .

الخاصة :- التعرف على اساسيات التمريض والاسعافات الاولى والسلامة المختبرية والمهنية في حقل

التمريض وطرق التعامل مع المريض خلال تواجده في المختبرات الطبية .

Theoretical syllabus	
Topics	Week
Introduction to nursing	1
Medical examination	2
Vital signs, temperature measurement,	3
. Pulse, definition, factors that effecting pulse, measurement of pulse	4
Respiration, definition, factors that effecting respiration, measurement of respiration	5
Blood pressure, definition, factor the effecting blood pressure, hyper and hypotension, measurement of blood pressure	6
Health care, definition, factors effecting health care	7
Factors that effects the health of worker in laboratories, natural factors, infectious diseases	8
Chemical factors- disease	9
Psychological factors-diseases	10
.Biological factors- types-their effects on workers in Lab.- diseases	11 and 12
First aid- definition, paramedic, fundamental of first aid, wound, .bleeding	13 and 14
Burns- types of fracture aid- artificial respiration	15

Practical syllabus	
Topics	Week
Physical and medical examination	1
Methods of bio-vital markers measurement-temperature measurement	2
Pulse measurement, atrial, vein pulsation	3
Respiration measurement	4
Method of blood pressure measurement	5
Review for bio-vital markers measurement	6
Disinfection and sterilization methods	7
Methods of drugs intake and needle glaucoma	8
Samples collection from patients	9
Blood collection	10
Review	11
.First aid- wound and bleeding first aid.	12
First aid- fractures first aid- poisoning	13
Choking first aid- Heart massage	14
Application of artificial respiration	15

الساعات الأسبوعية				السنة الدراسية	تطبيقات الحاسوب (1)	باللغة العربية	أسم المادة
عدد الوحدات	المجموع	عملي	نظري		Computer Applications(1)	باللغة الإنكليزية	
2	2	2	-	الثانية	باللغة العربية	لغة التدريس للمادة	

الأهداف العامة والخاصة :-

أن يكون الطالب قادر على التعامل مع جهاز الحاسوب وملماً باستعماله وفاهماً طرق استخدام برامجه .

المفردات النظرية والعملية	
الأسبوع	تفاصيل المفردات
الأول	تعريفية بالحاسبات : أجيالها – مكوناتها : المادية Hardware والبرمجية Software - (برامجيات النظام والبرامج التطبيقية) .
الثاني	نظام التشغيل MS-DOS : مفهوم نظام التشغيل – إشارة النظام – الأقراص – الأدلة ومستوياتها والملفات – أوامر نظام التشغيل الداخلية Internal Commands - والخارجية External Commands (الأوامر الأكثر استخداماً) .
الثالث إلى الثاني عشر	أوامر نظام التشغيل الداخلية : Internal commands : Dir – Del – Time – Date – Cls – RD – CD – MD – Echo – Ren – Copy – Vol – Ver – Path
الثالث عشر إلى الخامس عشر	نظام التشغيل Windows : مفهوم نظام Windows – مزاياه – متطلباته الأساسية – تشغيل النظام – مكونات الشاشة الرئيسية لسطح المكتب Desk top - مفهوم الأيقونة Icon - أسلوب التعامل مع فعاليات الفأرة – أهمية ومكونات شريط المهام Task Bar - الاستفادة من Start للدخول إلى البرامج – مفهوم المهام المحملة – الخروج من النظام وإطفاء الحاسبة Shut Down .

Subject	Term	Week hours		
Quality control سيطرة نوعية	First	Theoretical L.	Practical L.	Total
		2	4	6
Study language (English)	References			

Students will be able to understand how they qualify their results and adjust tests

Weeks	Syllabus detail (theory and practice)
1	Intoduction to quality control
2	Medical relevent of QA, Standarded units of the international system
3,4 and5	Balancing error detection and false rejection
6 and 7	Quality control materials
8	QA techniques for quantitative results
9	QA techniques for qualitative results
10	QA techniques for semi-quantitative results
11	Troubleshoot based on QA results
12, 13, and 14	Review
15	Final exam

Subject	Term	Week hours		
		Theoretical	Practical	Total
		L.	L.	
Histological techniques الشرائح النسيجية	First	2	3	5
Study language (English)	References			

Syllabus (Theory)

Weeks	Details
1	Mounting , Adhesives .
2-3	Staining , classification of stains .
4-5	Staining section
6	Methods of staining .
7-8	Types of stains , preparation of stain and oxidation of some stains .
9	Stains solvents ,factors affecting staining , storage of stains , how to choose stain .
10	Decalcification , bone tissue .
11-12	Examination for second term.
13-14	Tissue slide , Freezing microtome .
15	Final examination .

Syllbus (Practice)

Weeks	
1	Mounting.
2	Test for mounting + 4 slides.
3-4	Staining: types of stains Routine stain.
5-6	Steps of routine staining.
7	Test for staining and 2 prepared slides.
8	Special stain, verbaefs stain.
9	Bests carmine stain.
10	P.A.S. and Sudan 3 stain.
11-12	Examination for second term.
13	Election microscope, preparing tissue & stain.
14	Review
15	Final examination.

Subject	Year study	Week hours		
Molecular biology علم الاحياء الجزيئي	First	Theoretical L.	Practical L.	Total
		2	2	4
Study language (English)				

Students will be able to understand the molecular process of intact cells, signalling and the molecular structures of the cell.

Syllabus (Theory)

Weeks	
1	Introduction to molecular biology
2	Cell cycle
3	DNA and RNA structure
4	DNA replication
5	DNA transcription
6-7	Translation and protein synthesis
8	Gene expression and regulation
9-10	Inhibitors of translation and transcription
11	DNA repair system
12	Mutation and chromosomal aberrations
13	Chemical and physical agents that cause mutation
14	Recombinant DNA technology (cDNA technique)
15	Cloning and application (briefly)

Syllabus (Practice)

Weeks	
1	Introduction to molecular biology
2	Instruments and materials used in molecular biology
3	DNA isolation
4	RNA isolation
5	Electrophoresis
6	Restriction enzymes
7	Genetic engineering
8	c DNA techniques
9	Southran blot technique
10	Northran blot technique
11-12	Polymerase chain reaction (PCR) applications and protocol
13	Gene cloning
14	Review
15	Final exam

Subject	Year study	Week hours		
Laboratory safety سلامة مختبرية	First	Theoretical L.	Practical L.	Total
		1	2	3
Study language (English)				

Students will be able to deal with safety and avoid lab injury and understand biological and chemical hazards

Week	Ditails (theory and practice)
1and 2	Introduction to laboratory safety.
3	General lab. Safety roles
4 and 5	Personal protective equipments
6, 7 and 8	Biological hazards
9-10	Types of biological hazards
11	Chemical hazards
12	Types of chemical hazards
13	Review
14-15	Final exam

Subject	Year study	Week hours		
Blood Transfusion نقل دم	First	Theoretical L.	Practical L.	Total
	First course			
		1	2	3
Study language (English)	Assistant books	Clinical hematology in medical practice		

Identification of blood bank properties.

Theoretical syllabus	
Weeks	Topics
1	Information of blood transfusion
2	Blood components, blood collection, choosing the donor, physiological examination, time of collection.
3	Complete the second week principles.
4	Blood group: ABO system, Rh factor, Lewis system.
5	Classification of blood typing (long & short)
6	Direct and indirect coomb's test of blood
7	Process of cross matching test, reporting and record the results.
8	Roles of blood transfusion , blood disease
9	Pregnant care , leukemia of infants
10	Complete the principles above
11	Separation of blood contents, methods of separation.
12	Complete the principle above.
13	Component of blood after storage, anticoagulants.
14	Blood transfusion disadvantage.
15	Quality control , Tools ,Persons , Method

Practical syllabus	
Weeks	Topics
1	Instruments used in blood collection, examination and blood transfusion.
2	Donor choosing, how blood is collecting, donor care during and after blood giving.
3	Methods of blood typing, tube method.

4	Methods of blood typing, slide method, the difference between the long and short method .
5	Coomb's test , direct method .
6	Coomb's test, indirect method.
7	Compatibility tests and report writing.
8	Identification of disadvantage.
9	Blood plasma fraction and pregnant care.
10	Blood fraction methods.
11	Blood fraction methods.
12	Methods of blood storage and components.
13	Quality control.
14	Transfusion instrument and fluids giving.
15	Refreshing and moves presenting (Blood bank).

Subject	Term	Week hours		
		Theoretical	Practical	Total
		L.	L.	
Biochemistry الكيمياء الحياتية	First	2	4	6
Study language (English)	References			

Aim of subject

General aims :-

It give a general idea about biochemistry and to able to identify the biochemical reactions taken place in human tissues.

Weeks	Details
1	Biochemistry Biochemistry compounds, cell
2	Carbohydrates, classification ,its presence ,its importance, General properties of monosaccharide's.
3	Important monosaccharide's. Derivatives of monosaccharide's, reducing sugars. Its presence in human body , its reactions Disaccharides and polysaccharides properties, reactions occurrence.
4	Lipids ,classification ,properties. Fatty acids ,properties , reactions .
5	Essential fatty acids and unessential fatty acids . properties, reactions. Unsaturated fatty acids , properties its importance,
6	Compound lipids ,derived lipids cholesterol, its existence.
7	Proteins ,general properties ,peptide bond. Amino acids , properties , occurrence.
8	Amino acid ,classification ,reactions. Classification of proteins ,chemical properties of proteins.
9	Separation of organic compounds by chromatography.
10	Separation of amino acids. Examination
11	Nucleic acids, nucleoprotein, analysis of nucleoprotein.
12	Enzymes ,nomenclature, classification. Enzymes, properties , factors in fleeing the rate of enzymatic reactions. Enzyme ,inhibitions.
13	Hormones , properties. , Classification of hormones. Protein hormones , non protein hormones
14	Vitamins ,water soluble vitamins, classification, occurrence, deficiency. Fat soluble vitamins , classification, occurrence, deficiency Complete of vitamins.
15	Creatine and creatinine

Practical syllabus	
Lab. No.	Topics
1	Reactions of monosaccharide's, fehling, Benedict, barfood ,selivanof,Molish tests.
2	Reactions of reducing disaccharides.
3	Reactions of non-reducing disaccharides.
4	Chromatography
5	Chromatography
6	Phenyl hydrazine. Test. Of mono-and-disaccharides.
7	Reaction of polysaccharides.
8	Scheme of identification of saccharides.
9	Quiz, unknown.
10	Lipids, solubility, reactions of fatty acids, hydrolysis of fats and oils.
11	Test for saturation in fatty acids.
12	Quiz, unknown.
13	Proteins, properties, Albumin.
14	Quiz and practical examination.
15	Urea and uric acid. Test for urea and uric acid in urine.

الساعات الاسبوعية			السنة الدراسية	اسم المادة
المجموع	العملي	النظري	الاولى	حقوق الانسان والديمقراطية Human Rights & Democratic
2	-	2		

أهداف المادة :-

الأهداف العامة:- أن يكون قادراً في نهاية العام الدراسي أن :

- 1/ يتعرف الطالب على مبادئ وقيم حقوق الإنسان والتعريف بها وتربية الأجيال على احترامها والتمسك بها .
- 2/ يتعرف على الحريات العامة وماهية هذه الحريات في تفاصيلها .

الأهداف الخاصة :-

- 1/ يتعرف الطالب على التوعية المستمرة بحقوق الإنسان والحريات الأساسية المرتبطة بها .
- 2/ يحارب كل ما يرمي إلى تجاهلها أو النيل منها أو مس قدسيتها .
- 3/ يتعرف على مفهوم الديمقراطية وعلاقتها بالحريات العامة .

المفردات النظرية

الاسبوع	تفاصيل المفردات
1	حقوق الانسان -تعريفها - اهدافها حقوق الانسان في الحضارات القديمة وخصوصا حضارة وادي الرافدين
2	حقوق الانسان في الشرائع السماوية مع التركيز على حقوق الانسان في الاسلام
3	حقوق الانسان في التاريخ المعاصر والحديث - الاعتراف الدولي بحقوق الانسان منذ الحرب العالمية الاولى وعصبة / الامم المتحدة
4	الاعتراف الاقليمي بحقوق الانسان الاتفاقية الاوربية لحقوق الانسان 1950 الاتفاقية الاميركية 0
5	المنظمات غير الحكومية وحقوق الانسان (اللجنة الدولية للصليب الاحمر - منظمة العفو الدولية - منظمة مراقبة حقوق الانسان - المنظمات الوطنية لحقوق الانسان 0
6	حقوق الانسان في الدساتير العراقية بين النظرية والواقع 0
7	العلاقة بين حقوق الانسان والحريات العاة : 1- في الاعلان العالمي لحقوق الانسان 0 2- في المواثيق الاقليمية والدساتير الوطنية 0
8	حقوق الانسان الاقتصادية والاجتماعية والثقافية وحقوق الانسان المدنية والسياسية 0
9	حقوق الانسان الحديثة : الحقائق في التنمية - الحق في البيئة النظيفة - الحق في التضامن - الحق في الدين
10	ضمانات احترام وحماية حقوق الانسان على الصعيد الوطني - الضمانات في الدستور والقوانين - الضمانات في مبداء سيادة القانون الضمانات في الرقابة الدستورية - الضمانات في حرية الصحافة والراي العام - دور المنظمات غير الحكومية في احترام وحماية حقوق الانسان 0
11	الديمقراطية.تعريفها.انواعها
12	مفاهيم الديمقراطية
13	الديمقراطية في العالم الثالث و العالم

مفهوم الحريات، تصنيف الحريات العامة الحريات الاساسية ، الحريات الفكرية، الحريات الاقتصادية والاجتماعية	14
الامتحان النهائي	15

المرحلة الثانية

الفصل الدراسي الاول

ت	المادة	عدد الساعات			عدد الوحدات	نوع المادة	الملاحظات
		ن	ع	م			
1	علم الاحياء المجهرية Microbiology	2	4	6	6	تخصصية	اللغة الانكليزية
2	امراض الدم/ 1 Hematology\1	2	4	6	6	تخصصية	اللغة الانكليزية
3	كيمياء سريرية 1 Clinical chemistry\1	2	4	6	6	تخصصية	اللغة الانكليزية
4	علم المناعة Immunology	2	4	6	6	تخصصية	اللغة الانكليزية
5	طفيليات ابتدائية Protozoa	2	4	6	6	تخصصية	اللغة الانكليزية
6	فايروسات Virology	1	2	3	3	تخصصية	اللغة الانكليزية
7	سلوك مهني Medical Ethics	2	-	2	2	مساعدة	اللغة العربية
المجموع	الفصل الاول	13	22	35	35		

الفصل الدراسي الثاني

ت	المادة	عدد الساعات			عدد الوحدات	نوع المادة	الملاحظات
		ن	ع	م			
1	بكتريا مرضية Bacterial Pathogenicity	2	4	6	6	تخصصية	اللغة الانكليزية
2	امراض الدم 2 Hematology\2	2	4	6	6	تخصصية	اللغة الانكليزية
3	كيمياء سريرية 2 Clinical chemistry\2	2	4	6	6	تخصصية	اللغة الانكليزية
4	مناعة سريرية Immunology	2	4	6	6	تخصصية	اللغة الانكليزية
5	ديدان طفيلية Helminthes	2	4	6	6	تخصصية	اللغة الانكليزية
6	فطريات طبية Medical Mycology	1	2	3	3	تخصصية	اللغة الانكليزية
7	مشروع بحث Graduation project	-	2	2	2	مساعدة	اللغة العربية
المجموع	الفصل الاول	11	24	35	35		

Subject	Year	Hours / week		Credits
<i>Microbiology</i> علم الاحياء المجهرية	2 nd	Theory	Practical	6
		2	4	
<i>Language : English</i>				

Theoretical syllabus	
Weeks	topics
1	Introduction to medical microbiology, Microorganism, instruction with the host, microbial virulence, historical significance
2	classes of pathogenic microorganisms Viruses, bacteria, fungi, parasites
3	Classification and Scientific nomenclature of the bacteria. Normal Flora
4	Bacterial Structure
5	Bacterial division and growth
6	Bacterial Genetics, DNA transfer between bacteria
7	Pathogenicity of bacteria
8	TOXIGENESIS (bacterial toxin).
9	Classes of antibacterial agents
10	General characteristic and classification of virus
11	Viral genetics, a mutation, instruction between viruses, the role of genetic variation in evolution of viruses.
12	Pathogenicity of viruses
13	Classes of antiviral agents
14	Characteristic and classification of medical fungi.
15	Morphology and structure of fungi, Classes of antifungal agents

Practical syllabus	
weeks	Topics
1	Introduction, behavior inside Lab.
2	Sterilization and disinfection methods.
3	Specimen Collection and Processing
4	Microscopic Examination of Infected Materials
5	Use of Colonial Morphology for the Presumptive Identification of Microorganisms.
6	Biochemical Identification of Bacteria
7	Immunological methods used for microorganism detection
8	Applications of Molecular Diagnostics, NUCLEIC ACID HYBRIDIZATION TECHNIQUES
9	NUCLEIC ACID AMPLIFICATION PROCEDURES
10	Other Nucleic Acid Amplification Reactions, Nucleic Acid Sequence Based Amplification
11	Antimicrobial Susceptibility Testing, SELECTING ANTIMICROBIAL AGENTS FOR TESTING, Reporting of Susceptibility Test Results.
12	TRADITIONAL ANTIMICROBIAL SUSCEPTIBILITY TEST METHODS, Inoculum Preparation and Use of McFarland Standards, Dilution Susceptibility Testing Methods, Antimicrobial Stock Solutions, Broth-Macrodilution (Tube-Dilution) Tests, Agar-Dilution Tests
13	Disk Diffusion Testing, Principle, Establishing Zone-Diameter. Interpretive Breakpoints, Disk Storage, Inoculation and Incubation, Reading Plates and Test Interpretation
14	Modified Methods for Testing Slow-Growing or Fastidious Bacteria
15	Susceptibility Testing of Anaerobes

Subject	Year	Hours / week		Credits
<i>Hematology 1</i> <i>امراض الدم 1</i>	2 nd	Theory	Practical	6
		2	4	
<i>Language : English</i>				

Aim:-

Knowing medical system and tests that occur in laboratory and diagnosis the disease case

Theoretical syllabus	
weeks	topics
1	Introduction importance of hematology. Study the blood contains.
2	The haemoto poiesis in fetus, children and adult.
3	The normal red blood cells, importance, Structure, erythropoiesis and Function.
4	Polycythemia, causes, Clinical Signs and Laboratory diagnosis.
5	Study the red cell morphology in health and disease. Abnormality of R.B.C in size.
6	Abnormality of R.B.C in shape.
7	Abnormality of R.B.C in colour.
8	The normal Hb. Of the blood, contain and importance.
9	Study the types of normal Hb. Types.
10	Common Hb. Variant.
11	Anemia. Definition, classification and types.
12	Anemia. Causes .clinical signs and laboratory Finding.
13	Megaloblastic anemia and Pernicious anemia.
14	Aplastic anemia and hemolytic anemia.
15	Sickle Cell an. And acquired and autoimmune hemolytic anemia.

Practical syllabus	
weeks	topics
1	Identify hematological laboratory system.
2	Erythrocyte Sedimentation rate.
3	Packed Cell Volume.
4	Hb. Estimation
5	Study the absolute Values include MCV, MCH, and MCHC.
6	Abnormality of R.B.C in color, size and inclusion bodies.
7	Abnormality of R.B.C in shape.
8	Examination.
9	Study the Reticulocyte Count.
10	Anemic types.
11	Examination.
12	Study the abnormal Hb. (Hb.S).
13	Study the haemostasis disorders.
14	Study the bleeding time.
15	Study the Clotting time.

Subject	Year	Hours / week		Credits
<i>Clinical Chemistry I</i> <i>الكيمياء السريرية 1</i>	2 nd	Theory	Practical	6
		2	4	
<i>Language : English</i>				

Aim:

Students will be learned the essential information of clinical chemistry and their will be able to develop their skills in clinical chemistry.

Theoretical syllabus	
weeks	Topics
1	Introduction to clinical chemistry Disciplinary of clinical chemistry Introduction of metabolism, types of metabolism (anabolism and catabolism) collection and handing of blood samples , anticoagulant , urine compassion ,urine collection methods urine preservative
2	Acid-base balance
3-4	Electrolytes (Na⁺, K⁺, Cl⁻, Ca²⁺, Mg, ect....) Diseases related to increase and decrease of electrolytes
5	Trace element [Cu ²⁺ , Ceruloplasmin, Zn, Mn], disease appeared in abnormal metabolism of these metals.
6-7	Glucose digestion and absorption (glucose metabolism) Glucose uptake by cells Glycolysis and hormones that regulate glycolysis
8	Exam
9	Tricyclic acid (TCA, Krebs' cycle) 1- Reactions of TCA 2- Energy production of TCA 3- Function and regulation of TCA 4- dysfunction of TCA
10	Glycogen metabolism 1- Regulation of synthesis 2- disorders of glycogen metabolism
11	Gluconeogenesis Precursors (such as Pyruvate, lactate, alanine, ect...)
12-14	Diabetes Mellitus 1- blood glucose and regulation of blood glucose (role of insulin and glucagon hormones in glucose regulation) 2- Hyperglycemia (types of DM) 3- Hypoglycemia
15	Review for final exam

Practical syllabus	
Week	Topics
1	Introduction to clinical chemistry and safety (Personal protective equipment's PPE)
2	Spectrophotometer
3-6	Electrolytes estimation (Na^+, K^+, Cl^-, Ca^{2+}, Mg, ect....)
7	Estimation of inorganic phosphate in Serum ,un known
8	Exam
9-11	Exam Trace element estimation [Cu^{+2}, Ceruloplasmin, Zn, Mn]
12-14	Iron and total iron binding capacity (TIBC)
15	Review for final exam

Subject	Year	Hours / week		Credits
<i>Immunology</i> علم المناعة	2 nd	Theory	Practical	6
		2	4	
<i>Language : English</i>				

Theoretical syllabus	
weeks	Topics
1	علم المناعة: تعريف وتصنيف اقسام المناعة, المناعة الطبيعية والمكتسبة, عوامل ودفاعات المناعة الطبيعية
2	الجهاز المناعي, الانسجة والخلايا اللمفاوية, منشأها مستلماتها ومراحل نضجها, الاعضاء اللمفاوية الاولى والثانوية
3	Phagocytosis: الخلايا الملتهمه, الخلايا اوحيدة النواة, الالتهابو البلعمة Antigen presenting cells: المنشأ, نضجها, مستلماتها, انواعها
4	Antigen and antigenic determination تعريفه, خصائصه, انواع المستضدات (المستضدات الخارجية والداخلية)
5	Antibodies تعريف الضد, التركيب, الانواع, الخصائص, التصنيع والتحرير
6	الاستجابة المناعية: الاولى والثانوية , خصائصهما والفروقات بينهما, تنظيم الاستجابة المناعية
7	Major histocompatibility complex (MHC) تعريفه, اصنافه, دوره في عرض المستضدات
8	Complements تعريف المتمم, تنشيطه, طرق التنشيط, المثبطات امراض المصاحبة لنقص المتمم
9	Cytokines
10	المناعة ضد الجراثيم والسموم البية عمل الجهاز المناعة في الدفاع ضد الجراثيم
11	المناعة ضد الفايروسات, المناعة ضد الطفيليات المناعة ضد القطريات
12	Anti-tumor immunity تعريف الورم, المستضدات ذات العلاقة بالورم, انواعها, علاقتها بالاورام المختلفة, وسائل الهرب من مناعة الجسم
13	Hypersensitivity تعريفها, انماطها المختلفة, الامراض الناجمة عنها
14	النقص المناعي الطبيعي والمكتسب الانواع والنظريات
15	التلقيح, انواع اللقاحات

Practical syllabus	
Week	Topics
1	- General Lab instructions orientation to the student with meaning of immunity & of the lab. - Orient the student to what do we mean by the scientific references & how to use them, visiting to the library. - Seminars to the student.
2	Immunologic tests specimens (serum-plasma-CSF-&urine) How to handle such specimens, preservation of them & how to collect these specimens.
3	- How to collect blood samples \ venous –puncture, serum collection, serum inactivation, collection of blood samples from students, preserving such samples to be used during the course. - Titration & dilution (definition of them) types of dilutions &How to calculate. The dilution by tow method, micro dilution macro dilution.
4	- Students solution of different problem related to the above topic, giving them (students) home work. Quiz. - Preparation of R.B.S.S suspension, methods of preservation anti-coagulants, their types, giving the meaning of preservation of the cells, calculation of suspension dilution of different volumes. - Determination of humoral agents of body. defenses (meaning of humoral agents –types , The complements , their activity by using G^{+b} & G^{-b} & their roles to the complement & serum activation .
5	- Role of humoral agents to the body defense. - Antigens (types of somatic & flagellar Ags) R.BS suspension , blood serum) methods of the preparation (the somatic & flagellar)
6	Anti-bodies their preparation, meaning of Immunization, different methods of immunization.
7	Reaction of Ag – Ab Agglutination, types of agglutination. Applications of the agglutination. Pregnancy – Test Principle, purpose, procedure, The interpretations of results, order students to write a report.
8	C – Reactive protein Is taught as of pregnancy method.
9	- widal test (as above) - Applying the two methods slide method & dilution method.

	Meaning of titer, interpretation of the results, the prozone pheno menoun. - Brucella – test \ (as above) Rose – Bengal method - Brucella slide test.
10	Rickettsia & weil felix test
11	VDLR – test How to prepare of antigen emulsion two methods :- 1-VDRL – test 2-RPR (rapid plasma Reagan of prepared Ag.) TPHA (syphilis test) The reactants substances (their contents, how to be solved, test performance with the interpretation of results, reporting & quiz's.
12	Viral-hepatitis (Hbs-Ag-test) The principle ,causative agent ,mode of infection , reporting , quiz's
13	IMN – test (In reaction – mononucleosis test) The principle, causative agent, serologic diagnostic test, heterophiles Abs. differential david sohn -test.
14	Echinococcus slide – agglutination test. The diagnosis ,discussion of result (confirmative positive results)
15	Toxoplasmosis test Student, seminars, revisions.

Subject	Year	Hours / week		Credits
<i>Protozoa</i> طفيليات ابتدائية	2 nd	Theory	Practical	6
		2	4	
<i>Language : English</i>				

Aims:-

General aims:-

Having an idea about the human pathogenic parasites and its diseases and the lab. Diagnosis of its.

Special aims:-

To know how can be analyzed different techniques of diagnosis the pathogenic parasites.

Theoretical syllabus	
weeks	Topics
1	Defines the parasites ,parasitology types of parasites Types of host, Classification of parasites, Protozoa + metazoan Metazoa [helminthes and arthropoda]
2	Introduction generally in characteristic feature of protozoa and classification:- Rhizopoda ,Mastigophora ,Cilophora (ciliate) ,Telospora
3	Class Rhizopoda Pathogenic amoeba, <u>Entamoeba histolytica</u> , Morphology ,life cycle ,Pathogenicity ,Lab.diagnosis
4	Few of morphology ,pathogenicity ,diagnosis of :- <u>Entamoeba gingivalis</u> , <u>A canthamoeba</u> , <u>Naegleria</u>
5	Nonpathogenic amoeba Different between <u>Entamoeba coli</u> and <u>E. histolytica</u> . morphology , Lab, diagnosis of <u>Iodamoeba butschlii</u> , <u>Endolimax nana</u> , <u>E. dispar</u> , <u>Dientamoeba fragilis</u>
6	Class Mastigophor or Flagellates generally introduction in characteristic feature and classification in (intestinal flagellate, blood and tissue flagellates, genital flagellates). Intestinal Flagellate: - <u>Giardia lamblia</u> , <u>Chilomastix mesnili</u> , <u>Trichomonas hominis</u> ,Morphology ,life cycle ,pathogenicity ,and lab. Diagnosis.
7	Genital flagellate <u>Trichomonas vaginales</u> , Oral flagellates, <u>Trichomonas tenax</u> . Morphology, pathogenicity and lab. diagnosis
8	Tissue and blood flagellate Haemoflagellates forms. <u>Lishmania donovani</u> <u>Lishmania tropica</u> <u>Lishmania brazeliensis</u> Morphology ,life cycle ,pathogenicity, Lab. Diagnosis

9	<u>Trypanosoma cruzi</u> <u>Trypanosoma brucei</u> Morphology ,life cycle ,pathogenicity, Lab. Diagnosis Sample of Tse-tse fly and Reduviid bug.
10	Class Ciliophra (cilata) <u>Blantidium coli</u> Morphology ,life cycle ,pathogenicity, Lab. diagnosis
11	Review
12	Class Sporozoa Generally introduction of characteristic features of sporozoa. Life cycle in generally of <u>Plasmodium</u> spp. In man and insects.
13	<u>Plasmodium vivax</u> <u>Plasmodium ovale</u> pathogenicity, Lab. Diagnosis <u>Plasmodium malariae</u> <u>Plasmodium falciparum</u> Pathogenicity, Lab. diagnosis and short notes of parasites Babesia spp. The differences in lab. diagnosis with <u>Plasmodium</u> spp.
14	<u>Isosporia belli</u> , <u>Toxoplasma gondii</u> Morphology ,life cycle ,pathogenicity, Lab. diagnosis <u>Cryptosporidium</u> spp. Morphology ,life cycle ,pathogenicity, Lab. diagnosis
15	Review and examination

Practical syllabus	
Week	Topics
1	Information of parasitic Lab. diagnosis work , Collection of sample. Preservation and Fixatives solution.
2	General stool examination and preparation of Iodine, Eosin and saline solutions.
3	<u>Entamoeba histolytica</u> Permanent slides and stool examination.
4	Slides of <u>Entamoeba gingivalis</u> , <u>Blastocystis hominis</u> <u>Entamoeba coli</u> and stool examination for <u>E. coli</u> and <u>Blastocystis hominis</u>
5	Slides of <u>Diantamoeba fragilis</u> , <u>Iodamoeba butschlii</u> , <u>Endolimax nana</u> and stool examination .
6	Slides of <u>Giardia lamblia</u> , <u>Chilomastix mesnili</u> stool examination

7	<u>Trichomonas vaginalis</u> , <u>Trichomonas hominis</u> , <u>Trichomonas tenax</u> slides Stool examination
8	Haemoflagellates <u>Lishmania tropica</u> (Lab. diagnosis) <u>Lishmania donovani</u> (Lab. diagnosis) sample of sand fly
9	<u>Trypanosoma cruzi</u> (slides) <u>Trypanosoma brucei</u> (slides) With sample of Tse – tse fly ,Reduviid bug
10	Slides of <u>Blantidium coli</u> Stool examination
11	Review , examination
12	Life cycle of <u>Plasmodium</u> spp. Sample Anopheline , preparation of blood film (Thick and thin blood film)
13	Slides of <u>Plasmodium vivax</u> , <u>Plasmodium ovali</u> . Slides of <u>Plasmodium malariae</u> , <u>Plasmodium falciparum</u>
14	Slides of <u>Isospora belli</u> , <u>Toxoplasma gondii</u> With lab. diagnosis Slides of <u>Cryptosporidium</u> spp. With lab. diagnosis
15	Review and examination

Subject	Year	Hours / week		Credits
<i>Virology</i> الفايروسات	2 nd	Theory	Practical	3
		1	2	
<i>Language : English</i>				

Theoretical syllabus	
weeks	Topics
1	Introduction, General properties of virus, structure, classification of DNA & RNA viruses.
2	Replication of DNA and RNA virus
3	Virus isolation & cultivation.
4	Chemotherapy, antiviral agent & vaccines.
5	Influenza viruses
6	Paramyxo & Robella viruses.
7	Enteric viruses, Rhinovirus group.
8	Pathogenesis of viruses and Genetic of viruses
9	Herpes viruses
10	Oncogenic viruses
11	Hepatitis viruses
12	Rubies & other neurotropic viruses
13	Arbo viruses & viral haemorrhagic viruses
14	Adeno, pox & parvo viruses
15	Retro & Adis

Theoretical syllabus	
weeks	Topics
1	Virus identification in general
2	Equipments needed for virology lab.
3	Viral culture & isolation.
4	Elisa tests for viral identification
5-6	PCR
7	Electron microscope for virus identification
8-9	Viral DNA extraction
10	Viral RNA extraction
11	Detection by Neutralization test (Nt)
12	Detection by haemagglutination inhibition (HI)
13-14	Serological diagnosis and Immunological detection of virus infection
15	Review

Subject	Year	Hours / week		Credits
<i>Medical ethics</i> سلوك مهني	2 nd	Theory	Practical	2
			2	
		<i>Language : Arabic</i>		

أهداف المادة:-

العامية:- التعرف على الآداب الأساسية للسلوك المهني للعاملين في التخصصات الطبية.
الخاصة:- تأهيل الخريج على السلوكية المهنية في تعامله مع مهنته وتحقيق التوافق مع ذاته وبيئته المهنية (المريض ومرافقيه والعاملين في الحقل الصحي والأجهزة الطبية).

مفردات المنهج	
الاسبوع	الموضوع
الاول	مبادئ آداب المهنة في مراحل التطورات الحضارية. - مبادئ آداب المهنة في الحضارة العربية والإسلامية. - آداب التعامل مع المرضى في المستشفيات منذ القدم لحد الآن.
الثاني	السلوك المهني: تعريفه - مفهومه - تطبيقاته العملية - العلاقة بين العاملين ورؤسائهم.
الثالث	الآداب الأساسية للمهنة - خصائص آداب المهنة كموجه ومرشد للسلوك. - كيفية توظيف آداب المهنة من موقع الموجه لسلوك الفرد وانفعالاته وقدرته على اتخاذ القرار المناسب. - خصائص وصفات العاملين في الحقل الصحي... المظهر والسلوك والالتزام. - الحقوق الأدبية والقانونية للمريض. - التعامل وفق سلوكية المريض ومرافقيه.
الرابع	الأنماط السلوكية/ الإنسانية - التفاعلية - الجمعية. تعريفها، طبيعتها، دوافعها، تفسيراتها، والعوامل المؤثرة فيها.
الخامس	أساليب الاتصال/ اللغوية وغير اللغوية - تعريفها، أنواعها، تأثيراتها، تصميم أساليب اتصال ناجحة. - كيف تؤثر أساليب الاتصال على السلوك، على الإصغاء والاستماع، وكيف يتدرب عليه مع ذكر أمثلة تطبيقية.
السادس	الاتجاهات والميول السلوكية. - تعريفها، تصنيفها، العوامل المؤثرة فيها، طرق قياسها.
السابع	القيم والعادات والتقاليد. - تعريفها، تصنيفها، العوامل المؤثرة فيها، طرق قياسها.

الثامن	أنماط الشخصية وكيفية التعامل معها. - تعريف الشخصية- أنواعها- علاقتها بالمهنة. - شخصية التقني ومظاهره
التاسع	شروط تحسين الصحة النفسية - تعريفها, العوامل المؤثرة فيها , الوقاية من المرض النفسي, دور الصحة النفسية في الإعداد المهني.
العاشر	شروط التوافق المهني وعلاقة العمل المرتبطة به. - مفهومه, شروطه, سوء التوافق المهني.
الحادي عشر	التوصيف الوظيفي لعمل الخريج
الثاني عشر	سلوكية التعامل مع المريض - استقبال المريض والتعامل معه وكسب ثقته والحفاظ على أسرار المهنة. - تحديد المواعيد لمتطلبات الإجراء المطلوب. - الحفاظ على حاجيات المريض.
الثالث عشر	سلوكية التعامل مع الأجهزة والمعدات الطبية. - الإطلاع اليومي على الأجهزة والأدوات والمحاليل وبقية المتطلبات وتجهيزها للعمل اليومي وإدامتها وصيانتها والحفاظ عليها. - تهيئة الأدوية اللازمة للعمل وحسن التصرف بها.
الرابع عشر	السلامة المهنية - الوقاية من مخاطر العمل والحوادث. - الوقاية من مخاطر التلوث الجرثومي والسمي والإشعاعي. - الوقاية من خواطر العدوى بالأمراض المعدية والسارية. - تجنب الممارسات الخاطئة في حقل العمل.
الخامس عشر	تطبيقات في السلوك المهني. - زيارات ميدانية للمستشفيات والمؤسسات الصحية الأخرى للإطلاع وتبادل الخبرة والمعلومات.

Subject	Year	Hours / week		Credits
<i>Bacterial pathogenicity</i> بكتيريا مرضية	2 nd	Theory	Practical	6
<i>Language : English</i>		2	4	

Theoretical syllabus	
weeks	Topics
1	Systemic bacteriology, Genus Staphylococcus, General characters , toxin production , enzyme , immunity, Sensitivity test.
2	Genus Streptococcus General characters. Bio chemical test, Antigenic characters , M protein Streptococcus group A, diseases, toxin, and immunity.
3	Streptococcus group B, C, D. Biochemical reaction, immunity, diseases. Streptococcus pneumonia and Streptococcus variance disease, antigenic structure.
4	Gram positive bacilli – Corynebacterium diphtheria. Shape of bacteria, virulence, toxin, immunity, shick test. Antitoxin, skin test.
5	Genus Mycobacterium , general characters, Classification of bacteria , growth , antigenic structure , Disease, immunity.
6	Genus Bacillus, Bacillus anthraces. General characters, biochemical reaction, antigenic structure, toxin, immunity.
7	Anaerobic bacteria – Clostridium, general characters. Clostridium perfringens , general characters . Antigen structure, biochemical reaction, virulence, toxin. Clostridium tetani , disease , immunity, antigenic structure
8	Genus Neisseria, general characters, biochemical reaction. Neisseria gonorrhea, antigenic structure, virulence. Neisseria meningitides, immunity, sensitivity test. Antigenic structure , virulence , immunity
9	Genus Haemophilus , general characters , growth factors , Virulence, immunity. Genus Bordetella, general characters, disease.

10-11	Family Enterobacteriaceae , General characters , classification , biochemical reaction , Antigenic characters, sugar fermentation, sensitivity test. Genus Escherichia coli, Klebsiella, diseases, virulence, Immunity.
12	Genus Vibrio, history of disease, general characters, Antigenic structure, virulence, immunity, treatment. Classical Vibrio EL-TOR biotype. Vibrio parahaemolyticus. Campylobacter jejuni.
13	Genus Brucella , general characters , diseases , species , Zoonosis. Yersinia pestis , general characters , virulence , diseases
14	Francisella , general characters , transmission diseases , Virulence, syphilis, VDRL. Nocardia , general characters , stain-direct smear . Mycoplasma, shape, virulence, Lab.diagnosis .
15	Chlamydia , general characters , shape , biochemical test , Virulence, immunity.

Practical syllabus	
Week	Topics
1	Genus Staphylococcus General characters, Lab. diagnosis, coagulase test, catalase test.
2	Streptococcus General characters, Lab. diagnosis, sensitivity to bastracin. Treatment.
3	Genus Pneumococcus General characters, Lab. diagnosis, Optochin.
4	Corynebacterium: General characters, Lab. diagnosis, Eleck test.
5	Mycobacterium: General characters, Lab. diagnosis, Z.N. stain, petroffs method.
6	Genus Bacillus General characters, spore forming, aerobic. Lab. diagnosis.
7	Clostridium: General characters, spore forming, anaerobic. Lab. diagnosis, macintosh jar.
8	Neisseriae: General characters, oxidase test, Lab. diagnosis, growth requirements.
9	Haemophilus: General characters, X and V factors, Lab. diagnosis, satellitism phenomena.
10	Family Enterobacteriaceae General characters, G ve- Bacilli, Imvic test. Types of culture media.
11	E.coli General characters, lactose fermenter. Lab. diagnosis.
12	Klebsiella General characters. Lab. diagnosis, lactose fermenter, Imvic test.
13	Proteus General characters. Lab. diagnosis, non-lactose fermenter , Classification of species.
14	Salmonella and Shigella General chrsrcteres. Lab. diagnosis.
15	Pseudomonas: General characters. Lab. diagnosis, types of pigments, oxidase test. Vibrio General characters. Lab. diagnosis.

Subject	Year	Hours / week		Credits
<i>Hematology 2</i> <i>امراض الدم 2</i>	2 nd	Theory	Practical	6
		2	4	
<i>Language : English</i>				

Aim: Knowing medical system and tests that occur in laboratory and diagnosis the disease case

Theoretical syllabus	
weeks	topics
1	Haemostasis , definition and types .The role of blood Vessels and Platelet in Haemostasis.
2	Coagulation factors, name and figures.
3	Coagulative Processes.
4	Haemostasis disorder types. Haemostasis due to blood vessels disorder.
5	Haemostasis due to blood platelet disorder.
6	Haemostasis due to Coagulative disorder.
7	The White blood Cells, types.
8	The maturation of W.B.C.
9	The function of W.B.C.
10	Leukocytosis.
11	Leukopenia.
12	Leukemia, definition and classification.
13	Chronic and acute myeloid. L.
14	Chronic and acute myeloid. L.
15	Chronic and acute Monocytic .L.

Practical syllabus	
weeks	topics
16	Study the Clotting time.
17	Study the Hb. Electrophoresis.
18	Study the Plasma fibrinogen.
19	Examination.
20	Study the total Count of the W.B.C.
21	Differential Count of W.B.C.
22	Count the eosinophil.
23	L.E Cell
24	Examination.
25	W.B.C Series.
26	Study the Leukemia.
27	Study the Myeloid. L.
28	Study the Lymphatic. L.
29	Study the monocytic . L.
30	Use the Peroxides test for differential diagnosis.

Subject	Year	Hours / week		Credits
<i>Clinical Chemistry 2</i> <i>الكيمياء السريرية 2</i>	2 nd	Theory	Practical	6
<i>Language : English</i>		2	4	

Theoretical syllabus	
weeks	Topics
1-3	Protein metabolism and renal function 1-Serum Protein (components), 2- Amino acid metabolism, 3- fate of ammonia, 4- Urea cycle, urea metabolism and renal function tests
4-6	Lipid metabolism 1- fatty acids oxidation 2- ketone bodies Lipid profile and disorder in lipid profile (cholesterol, triglycerides, lipoproteins)
7	Disorders of purine and pyrimidine Uric acid metabolism (synthesis and hyperuricemia)
8	Exam
9	Introduction to enzyme (definition of enzymology) Creatin kinase CK (isoenzymes) Lactate dehydrogenase LDH (isoenzymes)
10-11	Liver function tests Bilirubin metabolism Jaundice (adult and neonatal jaundice) Hepatitis and liver function tests
12	Tumor markers
13-15	Hormones 1- Thyroid hormones (Thyroid function tests, parathyroid hormones) Fertility hormones (testosterone, luteinizing hormone, prolactin, follicular stimulating hormone)

Practical syllabus	
Week	Topics
1	Glucose estimation, glucose tolerance test
2	Renal function tests (urea in serum and urine) Serum creatinine and urine creatinine Measurement of glomerular filtration rate (creatinine clearance)
3	Total protein estimation and protein electrophoresis
4	Albumin in serum and microalbumin (24hr urine albumin)
5	Lipid profile (cholesterol and triglycerides estimation)
6	HDL-cholesterol, LDL-cholesterol and VLDL
7	Uric acid in serum and urine
8	Exam
9	Total Bilirubin (direct and indirect) Neonatal bilirubin estimation
10	Alkaline phosphatase estimation
11	Alanine aminotransferase ALT and Aspartate aminotransferase AST
12	Instruments used in hormones measurement (ELISA, RIA, VIDAS, ect...)
13	Thyroid function tests
14	Fertility hormones
15	Review and final exam

Subject	Year	Hours / week		Credits
<i>Clinical Immunology</i> المناعة السريرية	2 nd	Theory	Practical	6
		2	4	
<i>Language : English</i>				

Theoretical syllabus	
weeks	Topics
1	مقدمة عن الامراض المناعية , الامراض الرثوية , التهاب المفاصل الرثوي Rheumatic diseases and Rheumatoid arthritis
2	داء الذئب الاحمراري و داء الصدف الرثيائي Systemic lupus erythromatous and Psoriatic arthritis
3	التهاب الفقار الرثيائي ومتلازمة شجرين Ankylosing Spondylitis and Sjogren's syndrome
4	Behcet's disease مرض بهجت
5	امراض الجهاز الهضمي والكبد 1- Gluten sensitive entero-pathy 2-Ulcerative colitis 3-Crohn's disease
6	Pernicious anemia
7	Diabetes Mellitus Type I
8	Review
9	امراض التهاب الكبد المناعي الذاتي
10	Primary biliary cirrhosis and primary sclerosing cholangitis
11	Renal diseases 1- Circulating immune complex 2- In situ immune complex formation 3- Antineutrophil cytoplasmic autoantibodies and associated diseases
12	Respiratory disease 1- Drug-induced respiratory disease 2- Eosinophilic pneumonia 3- Asthma
13	Immunological thyroid disease and Immunological infertility
14	Tumor and Tumor markers
15	Graft versus host rejection and transplantation

Practical syllabus	
Week	Topics
1	Investigations that use to diagnose Immunological diseases
2	Precipitation reaction & ring test Immuno diffusion test Ouden & ouchler long test The principle of test, reading the results, reporting.
3	Single –radio immune diffusion test The partigen platen – concentration calculation of the antigens.
4	Immuno – electrophoresis test.
5	Auto immune diseases R – factor test
6	Systemic lupus erythramatous test (SLE test).
7	Review
8	ASOT, Anti strptolysin O test normal value. And .titration by tub method and micro titration
9-14	ELISA application in immunology
15	Final exam

Subject	Year	Hours / week		Credits
<i>Helminthes</i> ديدان طفيلية	2 nd	Theory	Practical	6
		2	4	
<i>Language : English</i>				

Theoretical syllabus	
weeks	Topics
1	In generally introduction of characteristic features of metazoa Helminthes (cestoda ,trematoda and nematoda)
2	Class Cestoda <u>Taenia saginata</u> <u>Taenia solium</u> Morphology ,life cycle ,pathogenicity, Lab. diagnosis
3	<u>Hymenolepis nana</u> <u>Hymenolepis diminuta</u> Morphology ,life cycle ,pathogenicity, Lab. diagnosis
4	<u>Echinococcus granulosus</u> Morphology ,life cycle ,pathogenicity, Lab. diagnosis
5	Class Trematoda In general life cycle of <u>Schistosoma spp.</u> <u>Schistosoma haematobium</u> <u>Schistosoma mansoni</u> <u>Schistosoma japonicum</u> Morphology ,life cycle ,pathogenicity, Lab. diagnosis
6	Short notes of (liver flukes) <u>Fasciola hepatica</u> (Lung flukes) <u>Fasciola buski</u> (intestinal flukes) <u>Heterophyes heterophes</u> Lab. diagnosis
7	Class Nematode <u>Ascaris lumbricoides</u> <u>Trichuris trichura</u> Morphology ,life cycle ,pathogenicity, Lab. diagnosis
8	<u>Enterobius vermicularis</u> <u>Ancylostoma duodenale</u> <u>Necator americanus</u> Morphology ,life cycle ,pathogenicity, Lab. diagnosis
9	Larva migrans in human -cutaneous larva migrans <u>Ancylostoma caninum</u> <u>Schistosoma sp.</u>
10	-subcutaneous larva migrans (scrow worm)(Myiasis) -visceral larva migrans <u>Toxocara spp.</u> pathogenicity, Lab. diagnosis
11	Filaria <u>Wuchereria bancrofti</u> Loa loa Morphology ,life cycle ,pathogenicity, Lab. diagnosis
12	Short notes of class Annelida <u>Hirudo medicinalis</u> in human morphology and lab. Diagnosis.

	And from metazoan Class Arthropoda
13	Short notes of morphology and lab. diagnosis , some pathogenicity of 1-insect (Anopheline ,Sand fly ,Tse – tse fly ,Reduviid bug ,Culex , lice ,Fleas , Cimex) 2-Arachnids Mites , tick
14	Review
15	Examination (Final)

Practical syllabus	
Week	Topics
1	Slides of <u>Taenia saginata</u> , <u>Taenia solium</u> With lab. diagnosis
2	Slides of <u>Hymenolepis nana</u> , <u>Hymenolepis diminuta</u> With lab. diagnosis
3	Slides of stages of <u>Echinococcus granulosus</u> With lab. diagnosis
4	<u>Schistosoma haematobium</u> <u>Schistosoma mansoni</u> <u>Schistosoma japonicum</u> Slides of stages and kind, sample of its snail.
5	Slides of <u>Fasciola hepatica</u> <u>Fasciolopsis buski</u> .
6	Slides of <u>Heterophes heterophes</u> stages
7	<u>Ascaris lumbricoides</u> Slides stages and lab. diagnosis
8	<u>Enterobius vermicularis</u> Slides (stages)
9	<u>Ancylostoma duodenale</u> slides (stages) <u>Necator americanus</u> slides (stages)
10	Larva <u>migrans</u> slides and picture
11	<u>Filaria</u> slides and pictures of <u>Wuchereria bancrofti</u> Loa -loa
12	Concentration methods hotation , sedimentation , special concen .(formal ether)
13	Slides or pictures of some arthropoda (Lice, Fleas, Scrow worm,...etc.)
14	Slides or pictures of some arthropoda (Cimex, Tick, Mites,etc.)
15	Review and examination and G.S.E exam.

Subject	Year	Hours / week		Credits
<i>Medical Mycology</i> <i>الفطريات الطبية</i>	2 nd	Theory	Practical	3
		1	2	
<i>Language : English</i>				

Theoretical syllabus	
weeks	Topics
1	Introduction of medical Fungi
2	Structure, reproduction and classification.
3-4	Cultural characteristics, type of mycosis
5	General principle in treatment.
6-7	Actinomyces, Nocardia, Mycetoma
8	Dermatophytes
9	Candidiasis
10	Cytococcosis
11	Cryptococcosis
12	Histoplasmosis, sporotrichosis
13	Micellanaus fungi ,Aspergillosis, mucor
14	Rhizopus & penicillium
15	Anti-fungal agents , antibiotic produced by fungi

Practical syllabus	
Week	Topics
1	Fungus isolation in general
2	Equipment, chemicals needed for fungal media
3	Type of Fungal culture media
4	Isolation and cultured pathogenic Fungi
5	Using biochemical tests for identification
6	Macroscopic examination of fungal colonies
7	Microscopic examination
8	<i>Dermatophyte</i> identification
9	<i>Candida</i> identification
10	<i>Pencillium</i> identification
11	<i>Aspergillus</i> identification
12	<i>Actinomyces</i> identification
13	Antibiotic producing by fungus.
14	Anti-fungal agents
15	Review