

The degree plan

Semester: One

Duration: 22 Weeks

Number of credit hours:

<i>Course Code</i>	<i>Course Name</i>	<i>Credit hours</i>		
		Theory	Practical	Total
SUDA1011	Sudanese Studies I	1	0	1
ISLA1011	Islamic Studies I	2	0	2
ARAB1011	Arabic language I	2	0	2
BIOL1011	Introductory & Human Biology	2	2	4
CHEM1011	Chemistry	2	2	4
PHMA1011	Physics & Math	2	2	4
RMST1011	Introductory research methodology & statistics	1	1	2
ENGL1011	English Language	2	1	3
Total Semester Credit Hours				22

Semester :Two

Duration: 18 Weeks

Number of credit hours:

<i>Course Code</i>	<i>Course Name</i>	<i>Credit hours</i>		
		Theory	Practical	Total
SUDA122	Sudanese Studies II	1	0	1
ENGL122	English Language II	2	1	3
ISLA122	Islamic Studies II	2	0	2
ARAB122	Arabic language II	2	0	2
HIST121	Basic Histology	1	1	2
EMBR121	General Embryology	1	0	1
BIOC121	Introductory Biochemistry	2	1	3
PHYS121	Introductory Physiology	2	1	3
GROS121	Introductory Gross Anatomy	1	2	3
INFO121	Medical Informatics I	1	1	2
ETHI121	Introduction to medical ethics	1	0	1
Total Semester Credit Hours				23

Semester: Three

Duration: 18 Weeks

Number of credit hours:

<i>Course Code</i>	<i>Course Name</i>	<i>Credit hours</i>		
		Theory	Practical	Total
PATH211	General Pathology	2	1	3
MICR211	Introductory Microbiology	2	1	3
CARD211	Cardiovascular system	3	2	5
SUDA213	Sudanese Studies III	1	0	1
ENGL213	English Language III	1	1	2
ISLA213	Islamic Studies III	1	0	1
ARAB213	Arabic language III	1	0	1
BLIM211	Blood & immune system	3	2	5
Total Semester Credit Hours				21

Semester :Four

Duration:18 Weeks

Number of credit hours:

<i>Course Code</i>	<i>Course Name</i>	<i>Credit hours</i>		
		Theory	Practical	Total
ENGL224	English Language IV	1	1	2
ISLA224	Islamic Studies IV	1	0	1
ARAB224	Arabic language IV	1	0	1
MUSC221	Musculoskeletal system	2	3	5
GAST221	Gastro-intestinal system	2	3	5
URIN221	Urinary system	1	2	3
RESP221	Respiratory system	2	2	4
Total Semester Credit Hours				21

Semester :Five

Duration:18 Weeks

Number of credit hours:

<i>Course Code</i>	<i>Course Name</i>	<i>Credit hours</i>		
		Theory	Practical	Total
ENDO311	Endocrine & reproductive	2	2	2
HEAD311	Head and neck	2	2	4
NEUR311	Neurosciences	2	3	5
INFO312	Medical Informatics II	1	2	2
PHAR311	Introductory Pharmacology	2	1	3
BEHA311	Behavioral Sciences	1	1	2
Total Semester Credit Hours				18

Semester :Six

Duration: 18 Weeks

Number of credit hours:

<i>Course Code</i>	<i>Course Name</i>	<i>Credit hours</i>		
		Theory	Practical	Total
PATH322	Systemic Pathology	2	1	3
MICR322	Clinical Microbiology	2	1	3
EBMP321	Introduction to EBM	1	2	3
SKILL321	Basic Clinical Skills	1	2	3
COMM321	Communication Skills	2	1	3
PHAR322	Clinical Pharmacology	1	1	2
Total Semester Credit Hours				17

Semester :Seven

Duration: 20 Weeks

Number of credit hours:

<i>Course Code</i>	<i>Course Name</i>	<i>Credit hours</i>		
		Theory	Practical	Total
COME411	Community Medicine I	3	1	4
FOME411	Forensic Medicine I	3	1	4
MEDI411	Internal Medicine I	3	3	6
SURG411	Surgery I	2	2	4
Total Semester Credit Hours				18

Semester :Eight

Duration: 20 Weeks

Number of credit hours:

<i>Course Code</i>	<i>Course Name</i>	<i>Credit hours</i>		
		Theory	Practical	Total
COME422	Community Medicine II	2	1	3
FOME422	Forensic Medicine II	2	1	3
OBGY421	Obstetrics &Gynecology I	2	1	3
PAED421	Pediatrics I	2	1	3
DERM421	Dermatology	2	1	3
OPHT421	Ophthalmology	2	1	3
PSYC421	Psychiatry	2	1	3
Total Semester Credit Hours				21

Semester :Nine

Duration: 22 Weeks

Number of credit hours:

<i>Course Code</i>	<i>Course Name</i>	<i>Credit hours</i>		
		Theory	Practical	Total
SURG512	Surgery II	2	3	5
MEDI512	Internal Medicine II	2	2	4
OBGY512	Obstetrics &Gynecology II	1	2	3
PAED512	Pediatrics II	1	2	3
ANAE511	Anesthesia	2	1	3
RADI511	Radiology	2	1	3
ENTH511	ENT	2	1	3
Total Semester Credit Hours				24

Semester :Ten

Duration: 22Weeks

Number of credit hours:

<i>Course Code</i>	<i>Course Name</i>	<i>Credit hours</i>		
		Theory	Practical	Total
SURG523	Surgery III	0	5	4
MEDI523	Internal Medicine III	0	5	4
OBGY523	Obstetrics &Gynae III	0	4	4
PAED523	Pediatrics III	0	4	4
Total Semester Credit Hours				18

Total Number of weeks =196

Total credit hours =203

The Learning Objectives

Sudanese Studies) I-III(

General Objectives:

Taking into consideration of the different background of the students, this course offers learning experiences by the end of which students

1. gain insight into the impact of both ancient and modern histories of the Sudan on shaping the value systems of present Sudanese society
2. appreciate the cultural diversity of Sudanese communities
3. relate geographical, socio-economic & cultural diversity to the strengths of Sudanese society & the origins of conflict
4. quote examples of the contribution of Sudanese scholars & artists to national & international heritage
5. recognize the effects of environmental , socioeconomic & cultural factors on health & disease

Introductory research methodology &statistics

General Objectives:

The aim of this module is to enable the student to:

1. Learn the basic methods of research on which much of the scientific knowledge and practice underlying modern health care is based.
2. Read and critically analyze published research reports in medical journals and other publications.
3. Select and use appropriate statistical methods.
4. Make reasonable interpretations and draw valid scientific conclusions from analyzing different data sets.

Specific Objectives:

Upon the completion of the study of the module, the student should be able to:

1. Plan and conduct a research project, analyze and interpret the results, and prepare a final report which includes the essential components of a good research.
2. Explain how scientific research is useful for his/her practice.
3. Describe criteria for selection of health related problems to be given priority in research.
4. Describe research study designs available for specific types of investigations.
5. Define commonly used methods of sampling and of deciding sample size.
6. Describe the characteristics of data measurement scales and the main data collection instruments.
7. Explain the principles of the commonly used statistical tests and their appropriate use for a particular data set.
8. Describe the necessary components of a pilot study and how such study can be used to revise a proposed research design.
9. Use a PC in the analysis of the data results and in their presentation in tabular and graphic forms.
10. Discuss & observe ethical considerations in research.
11. Critique published research projects and articles published in medical journals
12. Discuss levels of measurement and their relationship to statistical analysis.
13. Collect, organize and summarize data in general tables.
14. Prepare a frequency distribution, a relative frequency distribution, a cumulative frequency distribution and a histogram.
15. Calculate a mean, median & mode and state the relative advantages of these measures of location.
16. Define the range, variance, standard deviation, percentiles & percentages.

17. Select the appropriate measures to use for a particular data set.
18. Describe the characteristics of the normal curve and skewness and kurtosis measures.
19. Describe population, sampling types and methods.
20. Explain statistical probability.
21. Define mutually exclusive events and independent events.
22. Differentiate between type I and type II errors.
23. Explain the process used to test hypothesis)the null hypothesis, the alternative hypothesis and the p-value (and the basis for rejecting and retaining the null hypothesis.
24. Determine when the t-test is the appropriate statistics to use.
25. Explain the relationship between one -and two -tailed t-tests and the power of a test.
26. Interpret a confidence interval.
27. Choose between the z and t statistics to construct a confidence interval about a mean.
28. Differentiate between statistical and clinical significance.
29. Identify situations in which the use of nonparametric techniques is appropriate.
30. State what a p-value) $p <$ or $p >$ (means in inferential tests.
31. Explain how mean difference, group variability and sample size are related to statistical significance.
32. Explain when to use correlation or regression techniques to answer research questions or test hypotheses.
33. Explain when it is appropriate to use multiple correlations.
34. Explain the statistics generated by the regression technique.
35. Construct a scatter diagram.
36. Distinguish between linear & non -linear association.
37. Analyze and present data using the Excel and SPSS Microsoft.
38. Interpret computer printouts of t-test, chi-square and correlation analyses.

Physics

Course description

This course will introduce students to the aspects of physics that are relevant to the study of medicine including physical measurements, standards and units .Fundamentals concepts of fluid and fluid pressure.Light and fiber optics.Electrical potential and introduction to ECG.The physical aspects of ultrasound and X-ray

Specific Objectives

By the end of this course each student is expected to

- ◆ Recognize the concepts of Measurements, Standards, Units and Errors
- ◆ Identify Human Mechanics
- ◆ Outline the concepts of Temperature, Behaviour of Gases and fundamentals of thermodynamics and heat transfer that is related to medicine.
- ◆ Understand the Fundamental Concepts of Fluids and pressure
- ◆ Identify the Electrical Potential and ECG
- ◆ Recognize the general concepts of Light, Optics
- ◆ Identify the physical concepts that is relevant to medicine such as X-ray, radio-isotopes, sound waves and instrumentation

General Objectives:

The aims of this module are to enable the students to:

1. Acquire new knowledge and skills essential for the study and practice of various health careers as they relate to physics.

2. Be knowledgeable on some apparatuses and understand the techniques used in the solution of some of the medical science problems.
3. Interpret information presented in tables, graphs and mathematical equations.
4. Understand how main facts and generalizations can provide explanations of familiar phenomena in the human body.
5. Present the results of practical work in the form of complete, understandable and objective reports.

Specific Objectives:

By the end of this module the student should be able to:

1. State the laws of motion and gravitational forces.
2. Recognize the role of magnitude and direction system various forces acting on the muscular-skeletal system.
3. Describe the use of centrifuges to separate large and small particles and molecules and the mechanisms of sedimentation of material in a liquid.
4. Relate the performance of the human body to work, energy, power and efficiency.
5. Explain the relationships of pressure, density, and flow rate of real fluids to study the circulatory system of the body.
6. Use instruments used for measurement of pressure and flow rate of blood in a biological system.
7. Understand the principles of surface tension so as to appreciate the role of the surfactant in the lungs.
8. Learn the thermal properties of various materials so as to explain the regulation of body temperature and be acquainted with thermography as a diagnostic tool.
9. Explain the role of change of internal energy and human metabolism.
10. Describe the concepts of electric potential, current, resistance and capacitance.
11. Apply the above concept)electric potential, current, resistance and capacitance (to nerve conduction.
12. Describe the types of electrical signals from the human body.
13. State the principles of wave motion, production and propagation of sound waves.
14. State the range of sensitivity of the human ear to frequency and loudness.
15. Describe the properties of ultrasound waves and some of its medical applications.
16. Explain the fundamental properties of light.
17. Explain the image formation by lenses in order to appreciate the correction of optical defects of the human eye.
18. Recognize the application of optics in some medical instruments.
19. Explain colour perception and measurement.
20. Describe emission and absorption spectra.
21. Interpret x-ray production and its diagnostic application in medicine.
22. Recognize the possible exposure hazards of diagnostic x-rays to patients.
23. Identify the nuclear structure and the properties of different emanations and the means of their detection.
24. State the radiation dose units and the permissible levels for mammals.

Chemistry

Course Description

This is an introductory chemistry course for first year medicine students .The course comprises two disciplines :general chemistry and organic chemistry .It provides the students with an

understanding of the fundamental concepts in chemistry; their ability to solve problems is based on this understanding.

General Objectives

A .General Chemistry Discipline

The aims of the general chemistry discipline are:

- 1 .To develop the students' ability to think critically and to solve problems, not just do numerical calculations.
- 2 .To provide the students with the basic concepts and ideas in the following subjects:
 - a (Physical quantities and their units, the use of dimensional analysis for solving problems, and the use of scientific notation for representing numbers.
 - b (Chemical formulas, atomic weights, and the mole concept.
 - c (Chemical equations, reaction stoichiometry and the limiting reactant concept.
 - d (Theories of acids and bases, strong and weak electrolytes, the autoionization of water, and the pH concept.
 - e (The common ion effect and buffer solutions, acid-base indicators, and the solubility product principle.
 - f (Properties of the states of matter: gases, liquids and solids.
 - g (Properties of solutions.
- 3 .To develop the students' practical skills in the laboratory sessions in the following areas:
 - 1 .Performing principal tests for anions and cations of inorganic salts.
 - 2 .Identifying unknown inorganic salts.
 - 3 .Standardization of solutions.
 - 4 .Acid – base titration.
 - 5 .Redox titration.

B .Organic Chemistry Discipline

The General Objectives of the organic chemistry discipline are:

- 1 .To provide the students with the basic concepts and ideas in the following subjects:
 - a (Nomenclature of organic compounds.
 - b (Chemical formulae and chemical equations.
 - c (Evaluation of the chemical reactions of different organic compounds.
 - d (Theories of acids and bases, and aromatic and non-aromatic compounds.
 - e (The bases of carbohydrates, amino acids, lipids, and nucleic acids.
- 2.To develop the students' practical skills in the laboratory sessions in the following areas:
 - a (Identifying the simple aliphatic and aromatic organic acids.
 - b (Identifying the aliphatic and aromatic organic salts.
 - c (Identifying and classifying carbohydrates.

Specific Objectives

Upon completion of the general chemistry discipline, the student should be able to:

1. Apply appropriate units to describe the results of measurements and use the unit factor method to carry out conversions among units.
2. Describe temperature measurements on various common scales, convert between these scales, and carry out calculations relating temperature changes.
3. Recognize and use formula weights and mole relationships, and interconvert masses, moles and formulas.
4. Determine percent composition of compounds, and perform calculations of purity of samples.
5. Describe chemical reactions by balanced chemical equations, and interpret balanced chemical equations to calculate the moles and masses of reactants and products

- involved.
- Determine the limiting reactant in a chemical reaction, and use the limiting reactant concept in calculations regarding chemical equations.
 - Use the terminology of solutions -solute, solvent and concentration, and calculate the concentration of solutions when they are diluted.
 - Describe the theories of acids and bases; Arrhenius, Brønsted-Lowry, and Lewis, the hydrated hydrogen ions, and the properties of aqueous solutions of acids and bases.
 - Complete and balance equations for acid-base reactions, and define acidic and basic salts.
 - Recognize strong electrolytes and calculate concentration of their ions.
 - Understand the autoionization of water, the pH and pOH scales and how they are used, and use ionization constants for weak monoprotic acids and bases.
 - Explain the common ion effect and illustrate its operation.
 - Recognize buffer solutions, describe their chemistry, and perform calculations related to preparation of buffer solutions and their action.
 - Explain what acid-base indicators are and how they function.
 - Write solubility product constant expressions, explain how K_{sp} 's are determined, and use them in chemical calculations.
 - Describe the properties of gases and compare gases, liquids and solids.
 - Describe the relationships among pressure, volume, temperature and amount of gas, use and understand the absolute temperature scale, and calculate gas densities.
 - Use the ideal gas equation to perform calculations as related to gas samples and describe how gas mixtures behave)Dalton's law.(
 - Carry out calculations about the gases involved in a chemical reaction.
 - Explain various kinds of intermolecular attractions and how they are related to physical properties such as vapour pressure, melting point, and boiling point
 - Describe evaporation, condensation, and boiling in molecular terms.
 - Describe the different types of solutions and the factors affecting solubility.
 - Describe various types of solids and relate the properties of different types of solids to the bonding or interactions among particles in these solids.
 - Express concentration of solutions in terms of molarity and mole fractions.
 - Describe the colligative properties of solutions and some of their applications, and perform calculations involving values of these properties and concentration of solutions.
 - Master the basic laboratory skills and be aware of laboratory precautions.
 - Identify the physical properties of an inorganic salt and perform principal tests for anions and cations.
 - Identify the anion and the cation of an inorganic unknown

Upon completion of the organic chemistry discipline, the student should be able to:

- Get familiar with the IUPAC nomenclature of various classes of organic compounds; alkanes, alkenes, alkynes, alkyl halides, alcohols, aldehydes, ketones, acids and esters.
- Understand the concept of aromaticity and the properties of aromatic compounds.
- Recognize the different types of organic reactions, their applications and how they take place.
- Understand what is meant by functional groups and recognize the different classes of organic compounds containing these functional groups.
- Describe the chemistry of carbohydrates, aminoacids, lipids, proteins

- and nucleic acids, and how they are formed.
6. Identify the physical properties of an organic liquid and perform tests on alcohols, aldehydes and ketones .
 7. Identify an unknown organic liquid.
 8. Identify the physical and chemical properties of simple aliphatic and aromatic organic acids, and its salts.
 9. Identify carbohydrates (mono-, di-, and polysaccharides).

Arabic language) I-IV(

English language) I-IV(

General Objectives:

The course seeks to achieve the following General Objectives:

1. Develop language skills necessary to enable students to cope with their medical studies through the medium of English.
2. Give appropriate language support to help students in developing their study and communication skills.
3. Build on basic skill levels achieved prior to university level in areas such as listening, speaking, reading, and writing.
4. Enhance students' ability to analyze medical terms into prefixes, suffixes, and combining forms.

Specific Objectives:

At the end of their English language course students are expected to be able to perform the following:

2. Master Latin and Greek roots, prefixes, and suffixes in order to understand both general university level and medical vocabulary.
3. Learn medical terminologies and their definitions.
4. Recognize the meaning of a core vocabulary obtained from medical texts.
5. Figure out the meaning of words from given contexts.
6. Develop a tolerance for unknown words which do not affect comprehension of particular texts.
7. Meaningfully communicate ideas on topics related to medicine in simple, compound, and complex sentences.
8. Develop necessary skills needed to write cohesive paragraphs using rhetorical patterns.
9. Extract main ideas and specific details from relatively short medical or scientific texts.
10. Be able to distinguish between main points and supporting points and detail in a given context.
11. Read and understand medical texts.
12. Demonstrate adequate control of Grammar, Vocabulary, and Style.
13. Understand the meaning and usage of a core vocabulary introduced in a variety of reading texts.
14. Understand meanings of new words from given contexts.
15. Demonstrate the ability to express themselves using different tenses and verb forms.
16. Make a short oral presentation of a medical text.
17. Show the ability to understand medical texts, as well as the ability to get a point across.
18. Write correct English sentences using appropriate tense and verb form.

Introduction:

The practice of medicine involves both scientific and moral undertakings .The moral part is the difficult one because individuals sometimes disagree what is the right thing to do in a particular situation .Moreover, the practice of medicine should be within the existing law .We have to discuss and clarify the moral issues and try to solve the ethical problems associated with our practice.

General Objectives:

To incorporate and precipitate in the student true Islamic beliefs.

To enable the student to:

- Know the sources of Islamic Principles and their evidences.
- Be familiar with the 4 sects and the Sunnah and Hadees of the Prophet Muhammad)PBUH.(
- Understand the different types of miracles in the Holy Quran
- Understand the specification of the Islamic community, and principles on which it is being built and effect of this to keep relations inside the family and in community.
- To clear the meaning of Islamic punishment.

Specific Objectives:

The objectives of the module are to enable the student to:

- Know the ideal Islamic society during the early periods of Islam explaining how the Muslims deviated during the era of the Umayyad in addition to the outcomes of that deviation.
- Get acquainted with the contemporary Islamic society, methods of thought, cultural invasion and its targets, and resurrection of Islamic reform movements clarifying the ways of scientific and educational reform.
- Observe ethical issues in his/her practice.
- Explain the principles on which ethical decisions are based especially Islamic principles.
- Discuss and analyze ethical problems and issues.

أ) الأهداف العامة:

تقديم رؤية فقهية تأصيلية لطالب الطب المسلم تربط في وجدانه وعقله بين الطب دراسة وممارسة من جهة، وبين دوافع التدين ومقتضيات الشريعة الإسلامية من جهة أخرى.
يهدف تدريس هذا المقرر إلى تخريج الطبيب الذي يسترشد بالدين الإسلامي في جميع جوانب الحياة من خلال تطوير فكر الطبيب المسلم لإيجاد مدرسة طبية إسلامية متميزة ذات عطاء مبتكر، وقد حددت له الأهداف العامة الآتية:
1 - تنمية معرفة الطبيب بتراثه الإسلامي في الطب للوصول إلى ثقافة طبية متوازنة.
2 - تخريج الطبيب المسلم الملتزم بأخلاقيات مهنة الطب بالأحكام الشرعية المتعلقة بالصحة والمرض.
3 - ربط دراسة الطب بأصول العلم في القرآن والسنة والانطلاق منها إلى آفاق جديدة من المعرفة.

ب) الأهداف التعليمية:

- 1- استيعاب المدخل الإسلامي للطب.
- 2- استيعاب المفهوم الشامل للأسس والأخلاقيات الإسلامية في الطب.
- 3- اكتساب النظرة الإسلامية للصحة والمرض.
- 4- معرفة أثر إسهام علماء الطب المسلمين في البحث الطبي.
- 5- الاستفادة من خبرة وعلم وسلوك علماء الطب المسلمين.
- 6- التعليم الطبي في عصر النهضة الإسلامية.
- 7- دراسة نتائج بعض نماذج المساهمات الطبية في عصر الترجمة والعصر الذهبي للحضارة الإسلامية لإظهار ما يلي: - الاستفادة من العلوم الأخرى واللغات الأجنبية.
- تطور المؤسسات العلاجية.
- الاكتشافات الأصلية لعلماء الطب والمسلمين.
- 8- تهيئة ذهن الدارس لبقية أجزاء المقرر بهدف تأصيل العلوم الطبية في القرآن والسنة.
- 9- تأصيل المعرفة التعليمية عن طريق شرح موجز للمواضع الطبية المتعلقة بالصحة والمرض ويضاف

- ذلك لمحة علمية عن محتوى الآية الكريمة أو الحديث الشريف.
- 10- تعريف الطالب بخلق وخصائص الطبيب المسلم.
- 11- تخريج الطبيب المسلم يعرف الأحكام الشرعية والواجبة في الصحة والمرض والقادر على إرشاد المريض وتوجيهه على ضوء المعرفة الطبية والحكم الشرعي وتشتمل المادة على التالي:
- 1) دراسة الأحكام الفقهية الخاصة بالعبادات كالطهارة الصلاة والصوم في الحالات المرضية.
 - 2) تعريف الطالب ببعض الأحكام الفقهية التي لها علاقة بالمعاملات المتعلقة بالمهنة.
 - 3) دراسة أحكام الممارسات الطبية الحديثة في الفقه

الأهداف الخاصة:

- يهدف هذا المقرر لجعل الطالب أن يكون قادرا على :-
1. أن يحدد الأسس العامة للفقه الإسلامي والطرق العامة لإستنباط الأحكام الشرعية.
 2. أن يناقش وفق منظور الشرع الإسلامي أهمية طلب العلم والعمل.
 3. أن يناقش رؤية الشريعة الإسلامية في دراسة الطب وممارسته.
 4. أن يضرب أمثلة متعددة لمساهمات الإسلام في مجالات الطب الوقائي الهدي النبوي في الطب.
 5. أن يضرب أمثلة مختلفة لتكريم الإسلام للنفس البشرية قبل وبعد ممارستها حتى وإن كانت غير مسلمة.
 6. أن يحدد رأى الشريعة في تشريح الجثث بغرض التعليم.
 7. أن يحدد رأى الشريعة في تشريح الجثث في الطب القضائي.
 8. أن يصف حدود العورة للجنسين في الإسلام والحد المسموح برؤيته منها أثناء تعلم أو ممارسة الطب.
 9. أن يحدد واجب الطبيب تجاه أسرار المرضى والحد المسموح بتجاوزه شرعا.
 10. أن يحدد الرأى الشرعي في استعمال العقاقير المحتوية على مواد كحولية أو مواد مخدرة.
 11. أن يعدد الوسائل المختلفة التي يمكن إستعمالها لمنع الحمل مع تحديد الرأى الشرعي في إستعمال كل منها.
 12. أن يحدد الرأى الشرعي في استعمال الأدوية المنشطة جنسيا.
 13. أن يعدد الأدعية والوصايا الدعوية المختلفة التي يمكن للطبيب المسلم أن يؤديها تجاه مريضه وذويه.
 14. أن يناقش وفق منظور الشرع الإسلامي الواجب الإنساني والدعوى للطبيب المسلم تجاه مريضه المحتضر وذويه قبل وبعد موته.
 15. أن يحدد الرأى الشرعي لعلاقة الجن بالإنسان وإمكانية الإضرار به وخاصة في جانب الأمراض النفسية والعلاج بالقرآن.
 16. أن يصف الصور المختلفة للخلوة بين الجنسين في الإسلام والواجب تجاهها في الممارسة الطبية.
 17. أن يحدد الرأى الشرعي في ممارسة الجنسين للتخصصات الطبية.
 18. أن يحدد الرأى الشرعي في الإجهاض العلاجي والتضحية بالجنين من أجل الأم.
 19. أن يحدد الرأى الشرعي في قتل الطفل المصاب بموه الرأس عند الولادة بالإضافة إلى ما يعرف الآن بقتل الرحمة.
 20. أن يحدد الرأى الشرعي في نقل الأعضاء البشرية بصورها المختلفة ونقل الدم من المسلم وغير المسلم والميت.
 21. أن يحدد الرأى الشرعي والعلمى في الإستنساخ وإمكانية تحديد نوع وكيفية الجنين.
 22. أن يحدد الرأى الشرعي في أطفال الأنابيب وحفظ الأنطاف والبويضات بالبنوك الخاصة.
 23. أن يعدد الصور المختلفة لختان الأنثى ومع تحديد الرأى الشرعي لكل منها.
 24. أن يحدد الرأى الشرعي في الصور المختلفة المتبعة في التخدير.
 25. أن يحدد الرأى الشرعي في جراحة التجميل بصورها المختلفة.
 26. أن يحدد الرأى الشرعي في إستعمال خيوط جراحية أو عقاقير مشتقة من الخنزير.
 27. أن يحدد وفق منظور الشرع وضع ودور الطبيب المسلم تجاه تطبيق الحدود الإسلامية مثل بتر الأعضاء.
 28. أن يتمكن من تحديد الديات الجراحية.

Introductory & Human Biology

General description

This course is expected to introduce students to basic biological concepts such as cell structure and division, integration of biochemical pathways responsible for generation, storage and utilization of energy in addition to gene expression and introduction to molecular biology and its relation to medicine.

Specific objectives

By the end of this course each student is expected to

- ◆ Recognize cell structure and division

- ◆ Integrate Biochemical Pathways responsible for Generation, Storage and Utilization of Energy
- ◆ Identify Gene Expression, its regulation and recombinant DNA Technology
- ◆ Outline the new concepts used in molecular biology and its relation to medicine
- ◆ Define biology and its branches.
- ◆ Distinguish between living and non-living things.
- ◆ State the sequence and levels of biological organization by constructing a hierarchy including individual and ecological levels.

By the end of this module, the student should be able to:

1. Explain scientific method and its use in systematically organizing knowledge.
2. Distinguish between asexual and sexual reproduction.
3. Describe the structure of a chromosome, prior to the start of cell division & duplicated chromosome.
4. Describe the normal karyotype of a human being and differentiate between male and female karyotype?
5. Distinguish between haploid and diploid organisms, and define homologous chromosomes.
6. Define the terms gene, allele, locus, genotype, phenotype, dominant, recessive, homozygous, heterozygous, and test cross.
7. Discuss how a single gene may affect many aspects of the phenotype.
8. Discuss ways in which genes may interact to affect the appearance of a single trait.
9. Discuss the phenomena of linkage and crossing over, and solve problems involving linked genes and mapping.
10. Discuss the genetic determination of sex and the role of the Y -chromosomes in determining maleness.
11. Distinguish between sex influenced, sex-limited and sex-linked genes.
12. Identify the properties, the chemical nature and the requirements of a genetic material replication.
13. Compare the organization of DNA in chromosomes in prokaryotic and eukaryotic cells.
14. Cite the significance of DNA replication features to cell divisions)meiosis & mitosis (and how it ensures to preserve the information generation after generation.
15. Outline the flow of genetic information in cells from DNA to protein.
16. Identify the different types of RNA.
17. Compare the structure of DNA and RNA, and explain how the structure of each is related to its role in the cell.
18. Outline the general characteristics of the genetic code.
19. Compare eukaryotic and prokaryotic mRNA.
20. Identify the different classes of mutations that affect the base sequence of DNA and the effect of each on protein product.
21. Distinguish between environmentally induced and inherited abnormalities.
22. Identify normal human male and female karyotype.
23. Identify the different types of chromosomal abnormalities, the pattern of single-gene inheritance, autosomal inheritance and linked inheritance.
24. Explain the genetic basis for all blood groups and for Rh -)D (factor.
25. Summarize current concepts of the control of gene function in prokaryotes and eukaryotes, with emphasis on the operon model of prokaryote gene regulation.
26. Summarize the properties of cloning vector, different procedures for isolating a specific gene and explain how a gene of interest could be cloned.
27. Define the different types of human DNA libraries.

28. Identify the potential applications of recombinant DNA technology.
29. Recognize the anatomical position & names, general body directions, planes and sections.
30. Distinguish between body cavities and describe homeostasis.
31. State the structure and function of the skin.
32. Label a diagram of the digestive system and its structure and give function of each structure.
33. State the types of teeth and draw the structure of a tooth.
34. List in sequence each structure through which a bit of food passes as it makes its way through the digestive tract and describe the four layers of the wall of the digestive tract.
35. Summarize the types of digestive enzymes and juices and their role in digestion of carbohydrates, lipids and proteins.
36. Comment briefly on absorption of products.
37. List functions of the circulatory system, the principal components of human blood, giving the function of each component.
38. Summarize the events involved in blood clotting.
39. List the functions of the lymphatic system describe how this system operates to maintain fluid balance.
40. Trace the flow of information through the nervous system and describe the principal divisions of the human nervous system.
41. Identify the structures that protect the human brain and spinal cord.
42. Describe the different parts of spinal cord and brain and their respective functions.
43. Describe the reflex arc process and the structure and function of the peripheral nervous system)somatic and autonomic.(
44. Describe the photoreceptors and their function.
45. Define the terms :hormone and endocrine glands, and identify sources of hormones other than endocrine glands.
46. Identify the principal endocrine glands, list the hormones secreted by each, and summarize their actions.
47. Identify the structures of the male and female reproductive systems on a diagram, and give the function of each.
48. Give the reasons why respiratory system is essential for the life of the human body.
49. Describe the pathway of air in ventilation and describe the structure and functions of respiratory system.
50. Summarize the neural control of respiration in relation to CO₂, pH and O₂ content of the blood.
51. Describe the location and the principal parts of the kidney and nephron, and give general functions of the urinary system.

Basic Histology

General Objectives :

The aims of this module are to enable the student to learn:

1. The cell, tissue and organs concept.
2. The structure and functions of basic body tissues; epithelium, glandular epithelium, neuroepithelium, supporting and protective connective tissue, muscular tissue and nervous tissue.
3. Blood composition and haemopoiesis.

Specific Objectives:

By the end of this module, the student should be able to:

1. Explain the cell theory and its organization, and the general characteristics of prokaryotic and eukaryotic cell organisms.
2. Discuss the structure of the cell nucleus and its biological roles .
3. Differentiate between smooth and rough endoplasmic reticulum, and describe the functional relationship between ribosomes and endoplasmic reticulum, and follow the fate of certain proteins synthesized on the endoplasmic reticulum as they are subsequently processed, modified, and stored by the Golgi complex.
4. Explain how Golgi complex packages secretions and manufactures lysosomes.
5. Define the functions of the lysosome and peroxisomes; and explain what happens when they leak.
6. Describe the ultrastructure of mitochondria and how the mitochondria synthesize ATP molecules.
7. Define the nature and mention the roles of microtubules, microfilaments, intermediate filaments in the dynamic structure of the cell and centerioles.
8. Describe the structure of flagellae and cilia, and how they function in locomotion?
9. Define the biological membranes :structure and function.
10. Contrast the physical with the physiological processes by which materials are transported across cell membranes.
11. Predict whether cell will swell or shrink under various osmotic conditions.
12. List the characteristics of mediated transport with facilitated diffusion.
13. Compare exocytosis and endocytosis, active and passive transport.
14. Compare and contrast adherens, gap and tight junctions.
15. Identify the stages of cell cycle and how the cycle is regulated.
16. Describe mitosis and meiosis and explain their significance .
17. Describe the mitotic spindle and the role of assembling and disassembling of microtubules in transport of chromosomes.
18. Define and describe the general characters of epithelial tissue.
19. Outline the differences between the covering or lining epithelium and the glandular epithelium.
20. Compare exocrine and endocrine glandular epithelium.
21. Outline the different types of glandular epithelium and differentiate between mucous and serous glands.
22. Describe the neuroepithelium and its function.
23. Outline the modifications of epithelial cell borders :structure and function of cilia or flagellate, microvilli and basal infoldings.
24. Define the epithelial cell polarity, cell adhesion molecules and the basement membrane.
25. Describe the nuclear composition, structure and function of chromatin fibers, nucleolus and nuclear membrane.
26. Describe the composition of connective tissue and compare between the types of connective tissue proper.
27. Describe the connective tissue cells and their functions.
28. Compare between collagen, elastic and reticular fibers.
29. Describe structure of the cartilage, explain how the cartilage grows (chondrogenesis), and compare between types of cartilage.
30. Define the structure of bone, and compare between the functions of the osteoblast, osteocyte and osteoclast.
31. Differentiate between compact and cancellous bone.
32. Explain the process of osteogenesis)ossification (and contrast between intramembranous bone formation and endochondral ossification.
33. Describe the secondary centers of ossification, the epiphyseal growth plate, and zones of endochondral ossification and structure of joints.

34. Describe the composition of blood, and differentiate between the different cellular elements of the blood.
35. Outline the steps of haemopoiesis)erythropoiesis and leucopoiesis.(
36. Differentiate between light and electron microscopic structure of skeletal, smooth and cardiac muscle fibers.
37. Explain the theory of muscle contraction :Role of actin and myosin myofibrils in the process of muscle contraction .
38. Describe the neuromuscular junctions.
39. Explain the smooth muscle contraction.
40. Describe the cytology of the neuron and the organization of the gray and white mater.
41. Compare the functions of neurons and neuralgia cell.
42. Differentiate between the structure of spinal and sympathetic ganglion.
43. Explain how the resting potential of a neuron is maintained and the changes associated with an impulse transmission along a neuron.
44. Compare continuous conduction with salutatory conduction.
45. Describe the events that take place in synaptic transmission, the neurotransmitters and where each is secreted and explain the factors that affect speed of transmission .
Classify the types of synapses.
46. Trace the steps of sample preparation for microscopic examination.

General Embryology

General Objectives:

The aims of this module are to enable the student to:

1. Understand normal development of the human embryo and foetus.
2. Correlate the different stages of development with organogenesis
3. Acquire knowledge of the principles and concepts in normal development and the causes of developmental anomalies.
4. Learn of common congenital anomalies.

Specific Objectives:

On completion of this module on general Embryology, the students should be able to:

1. Describe the reduction division and gametogenesis
2. Compare the process of fertilization and implantation at normal and abnormal sites.
3. Describe various stages of early development, formation of placenta, and variations.
4. Relate the development of various systems and organs of the body
5. Explain the basis of important developmental anomalies of different systems, clinical syndromes and their important causative factors.
6. State the clinical measures for the prevention and correction of congenital abnormalities.

Introductory Biochemistry

General Objectives:

The aims of this module are to enable the student to understand:

1. The basic structure and function of living tissues at the molecular level
2. The biochemical topics related to body systems.
3. The relation of the molecular structure to health and disease states.

Specific Objectives:

By the end of this course, the student should be able to:

1. Comment on the relation of the study of biochemistry to medicine.
2. List the major groups of chemical compounds contributing to the formation of living tissues.
3. Name the amino acids which share in protein structure and describe their chemical structure and properties.

4. Explain the structure of proteins and comment on their structure-function relationship.
5. Define protein denaturing; explain its causes and effects.
6. List the carbohydrates of biological importance and describe their chemical structure and properties.
7. Enumerate the lipids of biological importance and depict their chemical structure and properties.
8. Illustrate the chemical composition of biological membranes and the contribution of each component to the function of the membrane.
9. Explain the chemical composition of nucleotides, name the nucleotides of biological importance, illustrate their structure, and describe their functions.
10. Define enzymes and explain their mechanism of action and importance.
11. Define Michaelis constant and illustrate the effects of reaction conditions on the rate of an enzyme catalyzed reaction.
12. Classify enzyme inhibitors and give examples for their use as drugs.
13. Explain the relation of enzymes to disease, and their use as drugs.
14. State the importance of enzymes in the clinical laboratory, classify plasma enzymes, and relate their plasma levels to specific organ pathology.
15. Define isozymes and explain their use in clinical practice.
16. Define metabolism, catabolism, anabolism, and a metabolic pathway.
17. Explain the regulation of metabolic pathways.
18. Define the free energy change and standard free energy change of a reaction and explain the relation between these two concepts
19. Define an exergonic or an endergonic reaction, and explain the relation between free energy change and the direction of a reaction.
20. Give an account of the cell needs for energy, and how endergonic processes are driven.
21. Explain what is meant by a high energy compound, giving examples.
22. Elaborate on the role of ATP in energy utilization in the cell.
23. Name the fuel molecules used by body cells for energy production, and explain the steps for oxidation and energy capture from these molecules.
24. Illustrate the role of mitochondria in energy production in the cell, state what is meant by the respiratory chain and explain its role in oxidative phosphorylation.
25. Give examples for different inhibitors of oxidative phosphorylation, define uncouplers and explain their mechanism of action.
26. State the enzymes involved in carbohydrate digestion, their site of secretion, their substrates and products .
27. Name the main final products of carbohydrate digestion and explain the mechanism of their absorption.
28. Name the non-digestible carbohydrate; explain why it is not digested and its physiological importance.
29. Explain the major pathways in carbohydrate metabolism, give a definition, indicate the site and importance, illustrate the major steps, point out the key enzymes and final products, and explain the control of each pathway.
30. Calculate the energy yield of glucose oxidation under aerobic and anaerobic conditions.
31. Give an account of free radicals, peroxidation, antioxidants, and antioxidant enzymes.
32. Explain the process of digestion and absorption of dietary lipids, indicate the importance of bile salts, and explain the formation and clearance of chylomicrons.

33. Explain the pathway of fatty acid oxidation, indicating the importance of carnitine, and calculate the energy yield.
34. Give an account of fatty acid synthesis, indicating the site, the enzymes, the substrates, the source of reducing equivalents, and the control of this process.
35. Describe the process of elongation and desaturation of fatty acids and indicate the nutritional implication of this process.
36. Describe the synthesis of triacylglycerols and phospholipids.
37. Describe adipose tissue metabolism, indicating its hormonal regulation and physiological importance.
38. List the ketone bodies and define ketogenesis and ketolysis, indicate their sites, steps and importance and comment on the causes and effects of ketosis.
39. Give an account of the importance of cholesterol, its synthesis, transport, and excretion.
40. Explain the enzymes responsible for protein digestion, indicating their sites of secretion and their action, and indicate the final products of protein digestion, and the mechanism of their absorption.
41. Elaborate on nitrogen balance and the causes of positive and negative balance.
42. Define deamination, transamination, decarboxylation, and transmethylation, giving examples of reactions of amino acid metabolism.
43. Give an account of the sources and fate of ammonia, explaining possible mechanisms of ammonia toxicity.
44. Enumerate glucogenic and ketogenic amino acids, and explain the fate of the carbon skeleton of different amino acids.
45. Elaborate on the role of folic acid and vitamin B12 in metabolism and the effects of deficiency of these vitamins.
46. Give an account of nitrogenous compounds like creatine, histamine, catecholamines, serotonin, melatonin and melanin, their synthesis and their importance.
47. Enumerate & define essential amino acids, and explain the synthesis of non-essential amino acids.
48. Give an account of diseases resulting from genetic defects in amino acid metabolism.

Introductory Physiology

General Objectives:

The aim of this course is to enable the student to understand the effects of the external environment on the general health.

General Objectives - :

On completion of this course the students shall

1. apply the concept of the internal environment to explain control mechanisms in health & disease
2. develop an awareness of organization of the autonomic n.s. & describe its role in control of visceral functions
3. explain the distribution & functions of body fluids so as to apply this knowledge to fluid therapy in the management of dehydration & blood loss
4. develop an awareness of common abnormalities of homeostatic regulation

Specific objectives:-

By the end of this course the student should be able to understand and discuss the followings:

1. The cell structure, organelles and their functions.
2. Distribution of body fluids, their volume measurement and composition in each compartment.

3. Transportation across phospholipids bilayer, osmosis, tonicity, diffusion, etc.
4. Transportation across proteins of the membrane, i.e. channels, pumps, carriers.
5. Endocytosis and exocytosis, active and passive transportation.
6. Forces acting on distribution of ions, Nernst equation and genesis of resting membrane potential.
7. Anatomical and functional unit of the kidney the nephron, i.e. GFR, tubular function.
8. Mechanisms by which water and Na balance, ADH, thirst)water, water input and output balance(
9. Normal K⁺ balance, role of the kidney & aldosterone in K⁺ balance, diuretics and their mechanism of action.
10. Homeostasis, negative feedback mechanisms, role of nervous system, hormones and at cellular level.
11. Autonomic nervous system anatomy, neurotransmitters, sympathy ...etc .as well as the sympathetic nervous system, its role in regulation of visceral functions.
12. Basal metabolic rate and factors affect it.
13. Responses of the body to cold and heat, pyrogens, mechanism of fever.
14. Basic mechanisms of aging & apoptosis.

Introductory Gross Anatomy

The Gross Anatomy course introduces medical students to anatomic and medical terminology, and to basic information on form, structure, and function that is fundamental to consideration of physical diagnosis, trauma, and disease in the ensuing curriculum .It introduces the general organization of the body into systems . The skeleton, the cardiovascular system & the nervous system are then introduced .The course uses didactic lectures with an emphasis on clinical examples, cadaver dissection, and assigned readings .

Medical Informatics I

General Objectives:

The aims of this module are to enable the student to:

1. Use the information science as a part of his learning and clinical practice.
2. Acquire the knowledge about the various applications of information technology in health field.

Specific Objectives:

Upon completing this module, the student should be able to:

1. Employ the word processing and the spread sheets in writing medical reports and medical information.
2. Prepare graphical presentation data.
3. Illustrate database programs and the data forms design.
4. Demonstrate design, capturing, storing and retrieving of pictures.
5. Display presentation programs.
6. Use the e-mail and internet services.
7. Use the hospital computer systems.
8. Operate the database systems designed for medical records.
9. Interpret the statistical analysis of medical data.
10. Employ the Medline, data banks and libraries in obtaining the medical knowledge.

Introduction to medical ethics

This course introduces students to the basic constraints and methods of ethical analysis and moral reasoning, with emphasis on their application to key ethical issues in health care practice and policy. Special attention is given to the role of the physician and the opportunities and challenges to the ethical practice of medicine in today's society.

Cardiovascular

General Objectives:

The aims of this module are to enable the student to:

1. Understand the structure and function of the human cardiovascular system and compare it with abnormal structure and function.
2. Assess the cardiovascular system and understand how its function is altered in common diseases states.
3. Understand the principle and concepts applicable to the cardiovascular system in general so as to use them during his professional career.
4. Learn the basis for the study of common clinical conditions and disorders, for the clinical examination together with performing simple clinical procedures related to the cardiovascular system and its management.

Specific Objectives:

By the end of this module, the student should be able to:

1. Relate the structure of the heart and major blood vessels of the body to their function in circulation.
2. Illustrate the operation of the heart as a pump, including the function of the heart valves, and be able to use the understanding of the cardiac cycle as a basis for physical examination of the heart.
3. Describe the development of the heart, some common congenital defects, and the pathology of valvular problems.
4. Use correctly the stethoscope to examine the heart and distinguish normal heart sounds.
5. State the factors influencing blood flow to individual tissues and the mechanisms of control of vascular resistance.
6. Discuss the role of the autonomic nervous system in the control of cardiovascular function, including the concepts of local and central control.
7. Explain the mechanisms controlling cardiac output in the normal individual, and how they operate in common situations such as exercise.
8. Specify and differentiate between the features of the pulmonary, cerebral, coronary, skin, and skeletal muscle circulations.
9. Distinguish the features of the normal electrocardiogram and their relation to electrical events in the heart, and be able to interpret changes in the ECG produced by common clinical conditions.
10. Explain the molecular and cellular events underlying the cardiac cycle so as to infer the principle of altering heart rhythm and contractility by drugs.
11. Measure the arterial blood pressure and clarify the mechanisms controlling it as well as the possible cause for hypertension & the principles of its management.
12. Interpret data relevant to the assessment, diagnosis, and treatment of a patient presenting with acute chest pain.
13. State the common causes and the clinical presentation of heart failure & outline its management.
14. Explain the structure and function of the coronary circulation, and the pathology and

- effects of ischemic heart disease and its management.
15. Identify the criteria of rheumatic heart disease & its possible medical & surgical management.
 16. State the effects of drugs acting on the autonomic nervous system.
 17. Define causes & management of cardiac shock and hemorrhage .

Respiratory

General Objectives

The aims of this module are to enable the student to:

1. Learn the normal structure and function of the human respiratory system and compare it with abnormal structure and function.
2. Understand the assessment of the respiratory system and understand how its function is altered in common disease states.
3. Acquire skills and working knowledge of the principles and concepts applicable to the respiratory system in general.
4. Recognize the basis for of common clinical conditions and disorders and their management, with performing simple clinical procedures related to the Respiratory System.

Specific Objectives

By the end of this module, the student should be able to:

1. Describe the internal and external structure, blood supply and innervations of the nose, and the connection between the nose, pharynx and auditory tube, and describe the paranasal sinuses.
2. Discuss the structure and function of the pharynx and larynx.
3. Describe the structure of the pleural cavity and lines of pleural reflection.
4. Identify the structure and arrangement of airways and blood vessels in the lungs.
5. Recognize the histology of the airways & the lungs.
6. Describe the development of the respiratory system.
7. Describe the structure of typical thoracic vertebra and rib and the relations and the arrangement of muscles in the thoracic wall and diaphragm.
8. Describe the function and distribution of the intercostal nerves, arteries and veins.
9. Explain the mechanism of inspiration and expiration and the measurement of lung volume and capacities.
10. Explain the carriage of oxygen in the blood.
11. Describe and explain the role of carbon dioxide in blood and its role in acid-base balance.
12. Define the neural and chemical control of breathing, particularly with reference to different types of respiratory failure.
13. List and explain the common tests of lung function.
14. Discuss the defenses of the lung against infection and the immunology of the lung.
15. Describe the condition of asthma, its presentation, diagnosis, cell biology, epidemiology and treatment with bronchodilators and other drugs.
16. Discuss the classification, microbiology and principles of diagnosis and treatment of pneumonias, and tuberculosis.
17. Recognize the parasites infecting the respiratory system and the diseases they cause.
18. State the definition and classification of interstitial lung disease, its relationship to occupational lung disease, its pathology and the principles of diagnosis and treatment.

19. Discuss the pathology of lung cancers, their classification, and the principles of their diagnosis and management
20. Describe the common diseases of the pleura and chest wall.
21. Describe the changes in various types of respiratory failure and explain their physiological consequences.
22. Interpret two-dimensional images of the Respiratory System from radiographic techniques.
23. State acute and delayed radiation hazards.
24. Explain the pathology of Respiratory System and drug action in relation to the underlying processes.
25. Outline the causes, diagnosis, pathology, prevention & management of pulmonary embolism.

Blood & immune system

General Objectives:

The aims of this module are to enable the student to:

1. Understand the normal processes involved in white blood cells formation and functions and compare it with abnormal processes and functions.
2. Learn the normal processes involved in red blood cells formation and functions and compare it with abnormal processes and functions.
3. Understand the assessment of the immune, blood and lymphatic systems and how functions are altered in common disease states.
4. Acquire skills and working knowledge of the principles and concepts applicable to the immune, blood and lymphatic systems in general.
5. Explain the basis for the study of common clinical conditions and disorders, and for the clinical examination together with performing simple clinical procedures related to the immune, blood and lymphatic system and its management.

Specific Objectives:

By the end of this module, the student should be able to:

1. Identify the structure and functions of primary lymphoid organs.
2. Identify the structure and functions of secondary lymphoid organs.
3. State the innate and adaptive immune processes.
4. Explain how T cells and B cells specifically protect the body against diseases.
5. State the process of humoral immunity.
6. State the cell-mediated immunity.
7. Explain the mechanism of the complement system.
8. State the response of the immune system to disease states including tissue damage, and pathogens.
9. Explain the ways that Human Deficiency Viruses (HIV) is transmitted.
10. Identify the hypersensitivity mechanisms and the principles of autoimmunity.
11. State the underlying processes of immunization and the immune response to

- transplantation in addition to the immunosuppressive drugs.
12. Explain the pathology of autoimmune disease .
 13. Identify the pathology of the disorders of white blood cells, lymph nodes and spleen including leukopenia, and neoplasia.
 14. State the structure and function of erythrocytes and the process of erythropoiesis.
 15. Explain the metabolism of iron and haem.
 16. Identify the metabolism of the red blood cell.
 17. Define the hoemostatic processes in platelets and blood coagulation and the coagulation cascades in addition to the anticoagulant drugs
 18. Identify the pathology of red blood cells bleeding abnormalities.
 19. Demonstrate practical skills associated with the evaluation of red and white blood cells profile under the microscope.
 20. Interpret two-dimensional images of the lymphatic system from radiographic techniques.
 21. State the pathology of immune, blood and lymphatic systems and drug action in relation to the underlying processes.
 22. Recognize the haemo and lymphatic parasites.
 23. Discuss the blood groups and be able to detect the ABO system.
 24. Explain the pathophysiology of anemia and the drugs used in its treatment.
 25. Define septicemia and endotoxic shock.

General Pathology

General Objectives:

The aims of this module are to enable the student to:

1. Learn the basis for the study of the etiology, pathogenesis and clinical manifestation of common diseases.
2. Understand the relationship between pathological changes and clinical features.
3. Acquire skills& working knowledge of the principles and concepts applicable to general pathology.

Specific Objectives:

By the end of this module, the student should be able to:

1. Define pathology, homeostasis, cellular adaptation, hypertrophy, atrophy, hyperplasia, metaplasia, cell injury)reversible and irreversible(, and cell death)necrosis and apoptosis.(
2. Describe the causes of cell injury –)hypoxia, physical, chemical, infectious, immunological, genetic and nutritional.(
3. Explain the factors and mechanisms of cell membrane permeability, cell injury)ischemia, hypoxia, free radical, and chemicals(
4. Compare labile, stable and permanent cells with regeneration and give tissue examples
5. State the factors that control cell growth
6. Describe granulation tissue, angiogenesis, wound healing by first intention, wound healing by second intention, tensile strength, and state the factors controlling each

7. Describe local and systemic factors that may influence repair process and list the repair process complications.
8. Discuss the classification, causes, types, cardinal signs, and events of acute inflammation
9. Differentiate between exudates and transudates
10. Describe emigration of leukocytes, chemotaxis, phagocytosis, degranulation, and leukocyte function
11. List mediators of acute inflammation and their activities
12. Describe causes, features, types, manifestations and mechanism of chronic inflammation
13. Compare acute and chronic inflammation
14. Discuss types, causative organism and morphology of suppurative inflammation
15. Compare catarrhal, membranous, and sero-fibrinous inflammations and give examples for each
16. Compare types of edema regarding their pathophysiology, morphology and effects
17. Describe the types and morphology of hyperemia and congestion
18. Define of hematoma, Hemothorax, hemopericardium, hemoperitoneum, hemothorax, petechiae, purpura and ecchymosis
19. Explain the types, causes, and effects of hemorrhages
20. Describe the sequence of events for normal hemostasis, thrombosis, and the anti thrombotic roles of endothelial cells
21. Explain the mechanism of activation of the coagulation system
22. Describe the pathogenesis, morphology, fate, and clinical correlations of thrombi
23. State the causes of disseminated intravascular coagulation)DIC(
24. Correlate the types of emboli with their effects
25. State the types, morphology, causes, examples, and clinical significance of infarction
26. Explain the types, chemical mediators, organs affected, stages, morphology, and clinical course of shock
27. Define the meaning and characteristics of neoplasia, hyperplasia, clones, benign, and malignant
28. State the epidemiology of cancer
29. Discuss the environmental and hereditary factors affecting neoplasia
30. Name the genes that regulate cell proliferation, protooncogenes, cancer suppressor gene, growth factors, and multisteps carcinogenesis
31. Describe the biology of tumor growth
32. Explain the mechanisms of local and distant spread of the tumor
33. Describe the etiology of cancer and viral oncogenesis
34. Explain the host defense against tumors)tumor immunity(
35. Interpret the clinical features of neoplasia)grading, staging, and laboratory diagnosis(
36. Compare the sites, morphology, gross and microscopic features, and consequences of the different types of skin tumors
37. Describe the pathogenesis, morphology, clinical course, and complications of tuberculosis
38. Outline the pathogenesis, morphology, clinical course, and complications of leprosy
39. Describe the pathogenesis, morphology, clinical course, and complications of syphilis & gonorrhoea.

Musculoskeletal

General Objectives:

The aims of this module are to enable the student to:

1. Learn the structure and function of bones, joints and muscles, their blood and nerve supply and to introduce their relevance to clinical disorders
2. Understand the structure and function of the upper limb, lower limb and the vertebral column by physical examination (i.e. surface and living anatomy), dissection and examination of prosected parts.
3. Acquire skills and working knowledge of the principles and concept applicable to the musculoskeletal systems, in general; muscle tone, tendon reflexes and fractures
4. Apply knowledge on the structure and function of Musculoskeletal System to other related regions.

Specific Objectives:

By the end of this module, the students should be able to:

1. Relate the structural, mechanical and physiological functions of the skeleton and the forms of bones to their function
2. Describe how normal bones grow and the salient features of bone disorders (e.g. osteogenesis imperfecta, osteoporosis, osteomalacia, rickets and Paget's disease (and tumours
3. Explain the drug action in relation to the underlying diseases of bones, muscles and joints .
4. Explain the homeostatic functions of bone (e.g. calcium storage and release, haemopoiesis), effects of nutrition and the role of hormones to maintain homeostasis
5. Differentiate the main causes of fractures and mechanisms of repair and healing following fractures (e.g. the role of periosteum and endosteum)
6. Describe the general structural and functional feature of joints (particularly a synovial sprain (and joint disorders) (e.g. bursitis, arthritis (which affect the movement
7. Relate how bones and joints receive their nerve and blood supply
8. Identify the types and gross structure of skeletal muscle (including the connective tissue elements), its attachment to bones and its blood and nerve supply
9. Define the physiological properties of muscle tissue (fast and slow fibers (and its basic elements, the motor unit and the phenomenon and mode of muscle contraction, relaxation and fatigue in relation to sources of oxygen and energy requirements
10. Describe the effects occurring in muscle disorders (e.g. muscular dystrophy, myasthenia gravis, tetanus (, tumors and the drug action in relation to the underlying processes.
11. Identify the salient features of the bones of the pectoral and pelvic girdles, upper and lower limbs, vertebral column on the skeleton and on radiological images, CT and MRI
12. Define epiphyses of bones, particularly those of the limbs
13. Describe the structure, function and main movements at the shoulder, elbow, wrist, hip, knee and ankle joints and their common injuries
14. State the common sites and consequences (particularly neurovascular effects (of fracture of the humerus, radius, ulna, femur, tibia and fibula
15. Explain the movements of major muscles groups of the hand, gluteal region, thigh, leg and extrinsic and intrinsic muscles of the foot
16. Demonstrate general arrangement and function of structures in hand for manipulation (hand spaces infection and carpal tunnel syndrome (and the foot for stability and propulsion
17. Demonstrate normal and abnormal gait
18. Identify the major nerves of the brachial, lumbar and sacral plexuses, their distribution and consequences of injuries to them.
19. Recognize the principle arteries and veins of the upper and lower limbs, and the sites of (a) (main arterial pulses and (b) (venepuncture and transfusion in the limbs
20. Explain the mechanisms of venous return from lower limb and causes of varicose veins

21. Identify the superficial structures)tendons, blood vessels and nerves (and the elbow, wrist, knee and ankle and the consequences of injuries to them
22. Identify the neurovascular structures in the axilla, inguinal and gluteal regions
23. Indicate the sites of intramuscular injection and sites of proximity of main nerves of the limb to the bones
24. Describe the general anatomy of the vertebral column and some common injuries and main causes of back pain
25. Explain of the structure and function of the sacroiliac joint
26. Describe the effects of ageing on and dysfunction of the musculoskeletal system
27. Relate limbs development as a basis for understanding the positional changes of its constituent structures)e.g .muscles, neurovascular elements, dermatomes, etc (.during pregnancy.
28. Compare the pathology and a etiology of osteomyelitis with polymyositis.
29. State the signs & symptoms of rotator cuff tears .

Gastro-intestinal

General Objectives

The aims of this module are to enable the student to:

1. Understand the structure, function and development of the human Gastro-intestinal System.
2. Acquire skills and working knowledge of the principles and concepts applicable to the gastro-intestinal system, in general.
3. Assess the gastro-intestinal system and how its function is altered in common diseases.
4. Learn the basic principles of management of gastro-intestinal illnesses.

Specific Objectives

By the end of this module, the student should be able to:

1. Describe the gastro-intestinal tract in terms of its gross and histological structure, including its blood and lymphatic supply and innervations.
2. Discuss the structure and function of the salivary glands, liver, gall bladder and pancreas.
3. Recognize the radiological and endoscopic appearance of the various regions of gastro-intestinal tract.
4. Explain the structures, the processes involved in mastication and swallowing food and the causes of dysphagia and of common esophageal disorders such as achalasia and gastro-esophageal reflux.
5. Discuss the mechanism and control of salivary and gastric secretions and their role in the process of digestion.
6. Classify and explain the movements of the stomach and regulation of the pyloric sphincter in the passage of the contents of the stomach to the duodenum.
7. Describe the main effects of peptic and gastric ulcer disease on the structure and function of the stomach, duodenum and associated structures.
8. Explain the mechanism of production, concentration and transport of bile and its role in the process of digestion.
9. Discuss the role of the secretions of the exocrine pancreas in the digestive processes.
10. State the consequences of pancreatitis and pancreatic duct blockage.
11. Describe the common hepato-biliary disorders)e.g .ascites and portal hypertension, jaundice, cirrhosis, gallstones and bile duct blockage (and their consequences.
12. Differentiate the structural adaptations of the small and large intestines in relation to the absorption of water, electrolytes, carbohydrates, proteins, lipid and vitamins and explain the principle methods and mechanisms relating to the process of absorption.
13. Describe the functions of the large intestine in the elimination of undigested and

- unabsorbed materials.
14. Define, in general terms, the basis of disorders such as malabsorption, diarrhea, steatorrhea and constipation and the principles of oral rehydration therapy.
 15. Discuss the embryological basis of the definitive disposition of the gastro-intestinal tract in the adult and describe common congenital disorders)hiatus hernia, Merckel's diverticulum, diverticulosis and common sites of atresia and fistulae of the gut tube(
 16. Explain the neurological basis of abdominal visceral and somatic pain.
 17. Describe the structure of the abdominal wall in relation to gastro-intestinal functions.
 18. Explain the function of the inguinal canal and the structural basis of the common congenital defects)inguinal and umbilical hernias (of the abdominal wall.
 19. Discuss the natural history of the common benign and malignant tumours of the gastro-intestinal tract and its associated structures.
 20. Recognize the common microbial, helminthes and protozoa affecting the gastro-intestinal system and the diseases they cause .
 21. Interpret two-dimensional images of the gastro-intestinal system from radiographic techniques.
 22. Explain the pathology of gastro-intestinal system and drug action in relation to the underlying processes.
 23. Discuss the viral infections of the liver& its clinical manifestations, complications and managements.
 24. Interpret the liver function tests.

Introductory Microbiology

The goal of Principles of Microbiology is to introduce students to the world of microbes and to prepare them for a lifetime of learning microbiology in relation to medicine and infectious disease .This course, presents the basics of :1 (Microbial cell structure and function, 2 (Bacterial genetics and regulation, 3 (Viral structure, genetics, and multiplication and 4 (pathogenesis . It also introduces learners to the exciting and rapidly developing field of immunology and prepares them for a lifetime of learning in this discipline .For physicians, the body's defense systems are particularly relevant and this course emphasizes the relationship to human disease as well as the remarkable biologic mechanisms utilized by the immune system .This course presents the basics of subject areas including antigen recognition, development of B&T cells, constitutive host defenses, immunopathology, inflammation, transplantation, allergy and tumor immunology .This is accomplished by a mixture of lectures, assigned readings and computer assisted instruction .

General Objectives:

The aims of this module are to enable the student to:

1. Understand the basis for the study of the etiology, epidemiology, pathogenesis, diagnosis and prognosis of different infectious diseases.
2. Correlate the different infectious diseases with their clinical features.
3. Acquire skills& working knowledge of the principles and concepts applicable to laboratory diagnosis in general microbiology.
4. To describe the various micro- organisms, that can cause infections in humans, their diagnosis, treatment and follow up.
5. To describe the various immunological responses produced by the immune system in an attempt to eliminate infections)Role of the immune system in infections(and also to describe the harmful effects of such responses in certain conditions.

Specific Objectives:

By the end of this module, the student should be able to:

1. Differentiate prokaryotic from eukaryotic cells.
2. Explain the general properties of pathogenic micro-organisms)bacteria, viruses, fungi (

3. Describe the composition and ultrastructure of bacterial.
4. Identify general types of bacterial morphology.
5. Discuss the basic nutritional and environmental requirements for bacterial growth.
6. Describe briefly the stages of bacterial growth.
7. Discuss the microbial genetics, gene function, chromosomal replication, bacterial variation, mutation, transformation, conjugation and transduction.
8. Define the following terms and concepts :sterilization, disinfection, antiseptic, bacteriostatic, bactericidal and antiseptic techniques.
9. Compare and contrast usefulness and effectiveness of various types of sterilization and disinfection.
10. Describe the general characteristics of different types of cocci, bacilli and other micro-organisms.
11. Discuss laboratory diagnosis of infections caused by different types of cocci, bacilli and other micro-organisms.
12. Describe epidemiology, pathogenesis, clinical disease and chemotherapy of infections caused by different types of cocci, bacilli and other micro-organisms.
13. Define the terms associated with fungal structure and reproduction.
14. Classify fungi into their respective classes.
15. Make a list of superficial, cutaneous, subcutaneous, and systematic mycosis.
16. Describe briefly the epidemiology, pathogenesis and clinical manifestations for each of cutaneous, subcutaneous and systematic mycosis.
17. Discuss the laboratory diagnosis for cutaneous, subcutaneous and systematic mycosis.
18. Describe the basic structure and main components of viruses.
19. Differentiate the viruses which can have DNA or RNA genome.
20. List the main criteria on which viruses are classified into families.
21. State the common viral illnesses.
22. Describe several ways by which viruses cause disease.
23. Describe the ways by which viruses are transmitted.
24. determine the various pathogenic micro -organisms that can cause infections including bacteria, viruses, fungi, Chlamydia richettsia, mycoplasma...,their morphology and classification.
25. describe the virulence factors and modes of transmission in such diseases.
26. describe the main methods of microbial investigations diagnose such diseases including isolation and identification of the micro-organisms from various specimens.
27. describe the main methods of sterilization and disinfection as a means of eliminating micro-organisms.
28. describe in general the main antimicrobial drugs)Antibiotics (used in treatment of infections.
29. describe the immune system)Tissues and cells (involved in defenses against infections.
30. describe the various types of immunity including natural and acquired types)Humoral and cellular.(
31. describe antigen and antibodies or immunoglobulin.
32. describe the complement system as a defense system in infections.
33. describe the primary and secondary immune responses.
34. describe the various immunopathological effects on the immune system in:
 - Hypersensitivity reactions.
 - Autoimmune diseases.
 - Immunodeficiency diseases.
 - Transplantation and tumors.
35. describe the various serological tests that help in diagnosis of infections.

Endocrine and reproductive

General Objectives:

The aims of this module are to enable the student to understand:

1. The structure and function of endocrine organs in relation to health and disease states.
2. The inter-relationship between various endocrine organs in relation to health & disease states.
3. To health & disease states.
4. The structure and cellular and molecular effects of different hormones and drugs related to the endocrine system.
5. Understand the processes of human reproduction from the production of gametes and the establishment of the embryo to independent life by the newborn infant.
6. Learn common problems and disorders of the male and female reproductive tract, the mechanism of contraception and the sexual transmissions of diseases .
7. Demonstrate skills and working Knowledge and understanding of the principles and concepts applicable to the reproductive system, in general.

Specific Objectives:

By the end of this module the student should be able to:

1. Define an endocrine gland and a hormone .
2. List major endocrine glands and the hormones they secrete.
3. State the chemical structures of different hormones.
4. Outline how hormones are assayed.
5. Identify the target cells for each hormone.
6. Explain the molecular mechanism of each hormone action .
7. Describe the anatomical features and relations of each of the endocrine glands.
8. Identify the microscopic structure of each gland in relation to the hormones they secrete.
9. Recognize abnormalities encountered with each gland.
10. Specify the known actions of each hormone on target tissues.
11. Summarize the effects of increased or decreased secretion of each hormone.
12. Identify the diseases related to altered secretion of each hormone and their pathological changes .
13. Match therapeutic drugs to the hormone they resemble or antagonize in their actions.
14. State the mechanism of action of each drug and its indications.
15. Predict the possible disease related to altered hormone secretion, knowing the specific symptoms & signs of the patient. Outline the development of the reproductive tract in the male and the female during fetal life, its hormonal control and abnormalities.
16. Explain the mechanisms underlying puberty in the male and the female and the sequence of associated changes .
17. Define precocious puberty & its management in boys & in girls.
18. Describe the anatomy of the male reproductive system, the histology of testis and accessory sexual organ and the formation of male gamete.
19. Explain the role of gonadotrophins in the control of male gamete production and steroid genesis, and the effects of androgens upon the body .
20. Describe common pathological changes of the male reproductive system, including prostatic and testicular diseases and cancer.
21. Explain the value of prostate-specific antigen (PSA) (as screening test for prostatic cancer).
22. Describe the anatomy of the female reproductive tract, and the histology of the ovaries, uterus, cervix and vagina, including the ovarian cycle)the formation of the female gamete (and the uterine cycles .

23. Explain the endocrine control of the production of the female gamete and the effects of ovarian steroid hormones upon the reproductive tract which underlies the normal menstrual cycle .
24. Define common menstrual abnormalities.
25. Give an account of the essentials of the pathophysiology of the menopause.
26. Discuss the advantages and possible risks of hormone replacement therapy for post menopausal woman .
27. Describe common pathological changes of the female reproductive system, including cancers of the reproductive tract.
28. List the risk factors for cervical cancer and uterine fibroid and cancer.
29. Name the processes involved in coitus.
30. State the drugs that can contribute to impotence.
31. Outline the possible main causes for infertility and their arrangement.
32. Describe the process of fertilization and implantation, the structure of the placenta, and the role of the endocrine activity of the placenta in the maintenance of pregnancy.
33. List main possible causes of ectopic pregnancy.
34. Describe the maternal adaptation to pregnancy, the underlying mechanisms involved and pregnancy-induced maternal disorders.
35. Explain how the pregnant is monitored for toxemia.
36. Describe abruption placentae .
37. Describe the normal pattern of embryonic and fetal development, the ways in which it may be assessed, and the principles of detection of fetal abnormalities.
38. State teratogenic effects of drugs and acute and delayed hazards of radiation .
39. Describe the physiological adaptation of the fetus to intrauterine life, the ways in which the neonate adapts to an extra uterine existence, and some common problems of neonates.
40. Explain the processes involved in a normal labour and delivery and some common problems of labour.
41. Interpret two-dimensional images of the reproductive system from radiographic techniques.
42. Explain the pathology of the reproductive system and drug action in relation to the underlying processes.
43. Differentiate sexually transmitted diseases and appraise their consequences.
44. State the complications of untreated gonorrhoea.
45. Describe the stages of untreated syphilis.
46. Explain why hepatitis B is classified as sexually transmitted.
47. Detect the diagnosis of acute puerperal mastitis and outline its management.
48. Diagnose fibroadenoma & nominate its treatments.
49. List factors that place women at higher risk for cancer for breast.

50. Outline the role of chemotherapy in the treatment of breast cancer.

Head and neck

General Objectives:

The aims of this module are to enable the student to:

1. Comprehend the surface anatomy & anatomical structures of the head neck region by actual dissection, prosection or by museum study.
2. Apply the anatomical knowledge and skills in solving clinical problems of head and neck.

Specific Objectives:

By the end of this module, the student should be able to:

1. Describe the mandible and different normal of the articulated skull.
2. Identify the foramina of the skull and the structures passing through them .
3. Describe post-natal growth changes of the skeleton of the head and face.
4. Describe cervical vertebrae, skeletal elements of larynx and the joints of the region i.e., Temporo-mandibular, intervertebral, cranio-vertebral, cricothyroid and crico-arytenoid joints.
5. Identify important muscles of the head & neck i.e muscles of :facial expression, mastication, prevertebral, infra and suprahyoid, suboccipital, tongue, palate, pharynx, larynx, middle ear, eye, floor of the mouth, sternocleidomastoid, trapezius, levator scapulae, and describetheir origins, insertions, nerve supply, actions and their important relations.
6. Identify important arteries of the region, their branches and distribution i.e., subclavian, common, internal and external carotid arteries.
7. Recognize important veins of the region i.e., subclavian, internal, external, and anterior jugular veins and describe their course, relationship, tributaries and clinical significance.
8. Identify cranial venous sinuses and stats their clinical significance.
9. Locate the regional lymph nodes and describe the scheme of lymphatic drainage of the region.
10. Describe the course and distribution of the cervical spinal and cranial nerves.
11. Correlate the formation of cervical andbrachial plexuses and describe their branches and distribution.
12. Describe thesympathetic trunk and the pattern of sympathetic innervation of the region including the cervical sympathetic ganglia, their branches and distribution.
13. Identify the pattern of parasympathetic innervation of the head & neck, including the four parasympathetic ganglia, their roots, branches and distribution.
14. Describe the boundaries, contents and subdivisions of the anterior and posterior triangles of the neck.
15. Understand and describe the superficial and deep fasciae of the head & neck and relate different facial planes to their clinical importance.
16. Identify and describe the anatomy the viscera of the region i.e .salivary glands, thyroid, parathyroid, larynx, pharynx, trachea and esophagus.
17. Describe the anatomyof the scalp, orbital and cranial cavities including meninges with highlights on important clinical aspects.
18. Identify the anatomical features of the oral cavity, tongue, cheek, lips, gums and teeth and describe these in details with particularemphasis on their clinical applications.
19. Describe the anatomy of the nasal cavity, paranasal sinuses, eye and ear along with the clinical aspects.
20. Interpret the normal radiographic appearances of the region.

21. Interpret the normal appearances of the CT scan and cross sectional anatomy of the region.
22. Read radiographs, C.T .scan and cross sections of head and neck.
23. Describe the development of the derivatives of pharyngeal arches, pouches and clefts and the congenital abnormalities relating to them.

Urinary

General Objectives

The aims of this module are to enable the student to:

1. Acquire sufficient knowledge of the structure of the urinary tract in order to understand the normal function and common clinical abnormalities.
2. Acquire skill and working knowledge for understanding of the principles and concepts applicable to the urinary system.
3. Appreciate the role of the kidneys in controlling the volume and composition of body fluid and the way in which they respond to departures from normal parameters of volume, electrolyte concentration and systematic haemodynamics.
4. Understand renal cellular function in order to comprehend the basis of relevant therapeutics.

Specific Objectives

By the end of this module, the student should be able to:

1. Identify the structure and relations of the kidney, ureters, bladder and urethra in the male and female, and the ways in which these structures may be imaged and examined.
2. Describe the development of urinary system and its relation with the reproductive system.
3. Describe the fluid compartments of the body, their electrolyte composition, and the normal concentrations of major electrolytes in extra cellular fluid, blood and urine.
4. Demonstrate the histological structure of the kidney and the component parts of the nephron.
5. Correlate the structure of the glomerulus with the process of glomerular ultrafiltration.
6. Discuss the process underlying the formation of diluted and concentrated urine.
7. Describe renal responses to extra cellular fluid volume depletion and other common alterations in systematic haemodynamics.
8. Compare the mechanisms controlling sodium and potassium balance.
9. Identify various types of urinary stones, its causes, common manifestations and management.
10. Understand the role of the kidney in maintaining acid base balance.
11. Interpret uncomplicated cases of acid base disturbances.
12. Compare the classes of diuretics and their mode of action.
13. Correlate the structure and innervation of the urinary bladder with the control of micturation.
14. Describe normal micturation.
15. Discuss the common pathological changes in the urinary tract, including glomerulonephritis, urinary tract infection, cystic diseases and neoplasia.
16. Demonstrate the features, consequences and management of acute and chronic renal failure.

17. Interpret two-dimensional images of the urinary system from radiographic and ultrasound techniques.
18. Explain drug action in relation to the underlying processes of the pathology of urinary system.
19. Explain the role of the kidney in the control of blood pressure.
20. Recognize the different parasitic infections of the urinary tract.
21. Perform urine analysis.

Neuroscience

The Neuroscience course integrates the clinical areas of neuroanatomy, neurophysiology, neuropharmacology, neuropathology, and clinical neurology into one coherent experience focusing on the patient. The course uses lectures, small group case discussions, laboratories, patient demonstrations

General Objectives:

The aims of this module are to enable the student to:

1. Learn the basic topography of the Head and Neck and its development;
2. Understand the overall organization of the Central Nervous System and the location of the fundamental relation between nervous system structure and function as illustrated by both normal and pathological conditions.
3. Study the structure and organization of special senses in relation to normal and abnormal functions.
4. Acquire skills and working knowledge of the principles and concepts applicable to the CNS and special senses, in general.
5. Acquire skills of data acquisition, analysis and problem solving in the context of the structure and function of the CNS .

Specific Objectives:

1. By the end of this module, the student should be able to:
2. Define the functional organization of the brain and spinal cord and the anatomical locations of key structures/functional regions.
3. Describe the coverings of the brain and their relationship with the skull in the adult and fetus and the musculature of the face.
4. Describe the cerebro vascular blood supply and lymphatics.
5. State the concepts of sensory modality and adequate stimulus and the principles of sensory transduction.
6. Describe the sensory pathways and patterns of sensory loss and the processing of sensory information and topographic representation.
7. Define the basic structures of the organs of special senses and their physiology including cutaneous sensation and pain.
8. Describe the "block diagram "of the motor system.
9. Describe the spinal reflexes and posture and the descending motor pathways; upper and lower motor neurons.
10. Identify the organization and motor functions of the brain stem, basal ganglia, cerebellum and cortical motor areas and their functional integration.
11. Examine the motor system and common motor disorders.
12. Describe the symptoms of migraine.
13. Describe the mechanism of nervous system injuries or damage and its response.
14. Understand the principle of using symptoms to determine anatomical localization disease process.
15. Defines the action of drugs on the CNS.

16. Understand the pathological processes associated with diseases of the CNS.
17. Explain the pathological manifestations of the CNS including the effects of cerebrovascular disease, hemorrhage and tumours.
18. Demonstrate skills in CNS physical examination .
19. Describe the first aid of seizure.
20. Interpret two-dimensional images of the CNS from radiographic techniques.
21. Explain the drug action in relation to the underlying disease processes of the CNS.
22. Recognize the various organisms)bacterial, viral and parasitic organisms (that might infect the C.N.S .and the special sense organs.
23. State the anatomical and histological structure of the ear and the physiology of hearing.
24. Demonstrate the practical skills for hearing assessment and ear examination.
25. State the anatomical and histological structure of the eyes and to the physiology of vision and accommodation.
26. Demonstrate the practical skills of eye examination.
27. Define the pharmacological actions of various drugs acting on the special senses.
28. Distinguish between the epidural and subdural hematoma.
29. Name the common symptoms and causes of CVA.
30. List the diagnostic tests used for meningitis and explain how the causative organism is identified .
31. Describe first aid for seizure.

Introductory Pharmacology

The goal of the Introductory Pharmacology course is to introduce the students to the principles of pharmacokinetics, pharmacodynamics, drug metabolism, factors that influence drug response, and principles in the development/evaluation/control of therapeutic agents .This course provides the foundations for a more detailed discussion of individual drugs in drug classes during the individual systems courses .The course is presented using didactic lectures and small group discussion sessions

General Objectives

The aims of this module are to enable the student to:

1. Understand the basic principles of drug action of major drug classes, that is, site and mechanism of action of drugs at the molecular as well as physiological levels and knowledge of the consequent effects, both desirable and adverse.
2. Recognize the principles of drugs absorption, bioavailability, distribution, metabolism and excretion and apply the pharmacokinetic principles in therapeutic practice.
3. Appreciate the possible interactions of drugs with other drug as well as with diet and management of adverse interactions.
4. Explain the different mechanisms of drug toxicity, namely overdose, allergic)immunologic (reaction, Pharmacogenetics, predictable extension of inherent pharmacological properties, and the appropriate measures to counteract these toxicities.
5. List and explain the possible factors which might increase hazards of drug administration or modify drug action.
6. Discuss the general principles of the autonomic nervous system pharmacology, autacoids, general chemotherapy, antifungal and antiviral agents, and cancer chemotherapy.

Specific Objectives

At the end of this module, the student should be able to:

1. Be aware of the historical development of Pharmacology and get acquainted with the different sub-divisions of Pharmacology.
2. Appreciate the importance of Pharmacology in the practice of medicine.
3. State some basic definitions of Pharmacology and the different nomenclatures of drugs.
4. Know sources of drugs, development of new drugs and be able to gather information about drugs.
5. Recognize the drug plasma decay curves and the Pharmacokinetic parameters which can be depicted from these curves .
6. Apply the knowledge of these pharmacokinetic parameters in designing dose-regimens to clinically achieve drug effectiveness and safety.
7. Recognize modifications of these parameters in certain disease states which necessity dose adjustment to avoid drug toxicity.
8. Understand the concept of receptors and their importance for explaining drug actions and the different theories on drug-receptor interactions.
9. Acquire knowledge on quantitative aspects of drug potency, efficacy and drug antagonism.
10. Recognize the concept of individualization of drug therapy, the important variables which can influence drug action and the special formulas for calculation of the dosage of drugs in relation to age and weight .
11. Recognize the different types of adverse drug reactions
12. State the different factors which predispose the patient to adverse drug reaction and drug toxicity.
13. Explain the mechanism involved with important examples in each case and how to prevent or minimize such unwanted effects
14. Define the basic principles and groups of the autonomic nervous system)ANS (drugs and enumerate the clinical conditions in which these drugs can be useful.
15. Recognize the various groups and types of autacoids, their receptors, their actions in the body, their possible uses as drugs, the availability of antagonists and potential place in the therapeutics.
16. Recognize the different classes, mechanisms of action and adverse effects of antimicrobial agents
17. Recognize the development of resistance to antimicrobial agents and how to minimize and treat this resistance.
18. Know how to select the proper drug and the method of administration.
19. List the combined antimicrobial therapy and its indications and its disadvantages.
20. List the causes of treatment failure
21. State the different antifungal agents, their uses and adverse effects.
22. Recognize the different antiviral agents used in both treatment and prophylaxis of viral infections and their adverse effects and the limitations of drugs used in viral infections.
23. State the different types of anticancer drugs and explain their biochemical mechanisms.
24. Recognize the possible hazards and toxicity signs of using these agents .

Introduction to EBM

This course uses a series of lectures, practice exercises and a small group experience to instill the fundamental principles of evidence based medicine)EBM .(The course is divided into five parts .

In part one the students learn the role of EBM in the practice of medicine, the basic steps of EBM, what research designs are used in medical research and the importance and value of internal and external validity .In part two students are introduced to the difference between descriptive and inferential statistics and how confidence intervals are used in medical journals . Part three teaches students the meaning of “testing” models, and the importance of statistical significance and confidence intervals .Part four instructs students on the evidence based medicine approach to the assessment of medical publications for therapy .Lastly, part five introduces the classical clinical diagnostic testing model and underscores the EBM approach to diagnostic testing .

Systemic Pathology

Module Objectives :On completion of this course the students shall

1. Correlate knowledge of the mechanisms of disease to clinical problems in internal medicine, pediatrics, surgery & obstetrics & Gynecology.
2. Formulate a management plan.
3. Relate clinical, laboratory findings & management to family & community perspectives of the disease.
4. Identify the hallmark gross & microscopic characteristics of key diseases commonly encountered in clinical practice
5. Relate laboratory findings with the classic symptom and signs of disease in the following content areas :
6. endocrine, reproductive, musculoskeletal, nervous system) --including eye & ear(, Hematology, Blood bank
7. Select appropriate laboratory tests used in diagnosis of main disease commonly encountered in clinical practice

Clinical Microbiology

On completion of this module the students shall

1. identify distinguishing characteristics, target organs, methods of spread of major pathogens in:
 - Bacteriology
 - Virology
2. use knowledge of clinical immunology to diagnose & manage bacterial, viral & other disorders
3. become aware of the main laboratory tests used for identification of pathogenic microorganisms

Introductory Medicine

General objectives

This is an introductory course in medicine .The general objectives of the course are to help the student to:

1. Acquire an ethical and humanitarian approach to clinical practice.
2. Acquire basic communication skills so as to take an appropriate history.
3. Conduct an organized physical examination of the major systems of the body and elicit the physical findings.
4. Be able to produce a verbal and written report of the history and physical findings.
5. Identify and critically evaluate the patient's problem(s) (by correlating his findings with the history and physical examination.

6. Explain his findings in terms of the pathophysiology of disease processes.
7. Acquire the skill of integrated thinking and develop a holistic approach to clinical problems.
8. Be able to relate his findings to specific disease entities.

Communication Skills

Module Objectives : On completion of this course the students shall

1. Understand the basics of interpersonal communication
2. Deal with difficulties in interpersonal communication
3. Be able to take a brief history from a patient
4. Collect socioeconomic & health information and report on family or community visits

Community Medicine I

General Objectives :

The aims of the epidemiology section are to enable the student to:

1. Identify, analyze and offer likely solutions to health problems in the community and population subgroups.
2. Explain the epidemiological importance, pattern, risk factors and prevention/control of important communicable and non-communicable diseases.

Specific objectives:

Upon the completion of this section of the module the student should be able to:

2. Describe the scope of epidemiology and its various uses in dealing with health related issues.
3. Explain the concept of endemic versus epidemic as part of disease dynamics and the concept of disease surveillance.
4. Describe the epidemiology of important diseases and other health related problems in the community.
5. Use various rates of morbidity and mortality to describe the pattern of health status of the community.
6. Describe the importance of the ecological system of agents, host and environmental factors in disease etiology.
7. Recognize the key role of epidemiology for identifying populations at high risk for particular diseases so as to plan appropriate intervention.
8. Explain how epidemiological methods are used to evaluate new drugs and other therapeutic modalities.
9. Explain the methods and the benefits of screening and early disease detection.
10. Explain the components of the infectious process including infective agents, source & reservoir of infection and mode of transmission.
11. Describe and explain methods of detection, prevention and control of communicable diseases.
12. Prepare a plan to carryout an investigation of an endemic outbreak.
13. Explain the epidemiological pattern of non-communicable diseases including injuries.
14. Discuss the risk factors underlying non-communicable diseases and describe their methods of prevention & control.
15. Define what is meant by sampling and representative samples.
16. Outline the relative advantages and disadvantages of commonly used sampling methods.
17. Examine the concepts of external validity, reliability and reference values.

18. Explain the sensitivity, specificity and predictive measures of a test.
19. Describe the basic statistical measures of rates)incidence, prevalence, mortality, case fatality, attack rate & adjustment of rates (and of risk)absolute risk, relative risk, attributable risk & odds ratio (in epidemiology.
20. Outline research study methods available for specific types of investigations.
21. Specify the major differences between inferences that may be drawn in experimental studies and those in observational studies.
22. Describe data collection instruments.
23. Define a clinical trial, single-blind, double-blind and triple-blind clinical trials.
24. Explain the concept of randomization.
25. Discuss the theoretical aspects of planning and conduction of field health surveys.
26. Plan or participate in planning and conducting field health survey which include the following:
 - a. Selecting the study topic.
 - b. Selecting the study population.
 - c. Defining survey objectives.
 - d. Preparing survey methods.
 - e. Pre-testing survey methods.
27. Demonstrate skills in conducting field health surveys to study the socio-demographic characteristic and health status of the population &/or social groups of interest e.g., school students.
28. Enter data and carry out basic statistical analyses of the collected data to obtain the appropriate results & interpret the results to draw sound conclusions & prepare a final report of the survey including recommendations.
29. Develop good interpersonal relationship between the survey team and working staff members.
30. Arrange referral of patients requiring evaluation & treatment during the field visits to the appropriate health care setting.
31. Discuss the ethical and economic constraints on planning and execution of research.

Forensic Medicine I& II

General Objectives:

The aim of this module is to enable the student to:

1. Study the fundamentals of forensic medicine and toxicology.
2. Acquire the knowledge about the gross changes of medico-legal significance.

Specific Objectives:

Upon completing this module, the student should able to:

1. Identify the human corpses and verify the causes of injury or death.
2. Observe, analyze and interpret the medico-legal cases of medical importance.
3. Describe diagnose and manage of common and highly dangerous poisons.
4. Identify the legal and ethical aspects of common and highly dangerous poisons.

Internal Medicine I-III

Specific Objectives

The course in medicine provides the student with clinical teaching and clerking opportunities to apply and master the techniques of interviewing and examining patients .The student learns to report medical information in both written and verbal forms .He applies principles of medicine in diagnosis and planning of management .He develops his skills in provision of patient care and practices the art of medicine in developing a sound patient-physician relationship .On completion of his training the student should be able to work up medical cases and interpret clinical and laboratory findings and to arrive at a working diagnosis .He should also

become familiar with basic diagnostic techniques, to be motivated to study independently and to participate in research .The student should observe Islamic ethics in his practice.

Surgery I-III

Objectives

The courses offered by the Department of Surgery consist of clerkships, which aim at further development of the clinical skills acquired in the fourth year .There is more exposure to surgical patients during periods of surgical posting and anesthesia .At the end of his surgical training, the student should be able to take a full history, perform a complete physical examination and request appropriate investigations necessary for the diagnosis of surgical patients .He should be able to recognize medical emergencies as distinct from surgical ones to ask for appropriate consultations .

On graduation, the student is expected to apply urgent and life saving measures in the case of surgical and anesthetic emergencies and to be familiar with the surgical conditions prevalent in Saudi Arabia .The student should be able to explain the general lines of the management for surgical conditions and to recognize his limitations as a general practitioner in application of surgical procedures .He should attain a high standard of professional ethics with patients and the surgical team.

Basic Clinical Skills

This course uses a mixture of lectures, assigned readings, demonstration labs and small group sessions .The student is introduced to the major components of a medical history, how to distinguish between symptoms and signs, the concept and descriptors of a chief complaint, patterns of pain radiation and patient information regarding medications, allergies, past medical history, and personal, social and family history . Students will then complete a series of practical sessions in which they are given the chance to acquire physical examinations skills of the various system .In addition, the student performs a video-taped OSCE and is assigned a preceptor with whom he/she completes a history and physical on three patients.

Community Medicine II

Aim:

The module of Primary Health Care (PHC) (and Family Medicine Practice)FM (is a rotation block which includes PHC with its various elements :FM, MCH, occupational & environmental health, health education & health services administration.

The aim of the rotation is to enable the student to learn the basic concepts, skills and attitudes of the above stated disciplines.

Specific Objectives:

By the end of the rotation, the student should be able to do the following objectives:

A. PHC & Family Practice:

1. Define PHC, describe its elements and the role of its team members and recognize its features in our community.
2. Describe how the work of PHC clinician fits into the health care system of the Kingdom.
3. Describe how health centers are organized and managed.
4. Record and analyze details of morbidity and mortality encountered in primary health care.
5. Conduct appropriate consultations with patients in a primary care setting to establish a patient's reason for consulting, the nature of the problem, how the problem affects lifestyle and family and to determine the management options available.
6. Undertake an appropriate physical examination in a primary care setting.
7. Establish good relationships with patients, families and the community and as far as possible meet their needs and cope with their expectations.

8. Provide appropriate comprehensive and continuing care for individuals, families and the community.
9. Demonstrate clinical competence in respect of diagnosis and management of acute and chronic problems commonly met in primary care.
10. Deal in a balanced way with physical, psychological and social problems of patients.
11. Provide and organize promotive and preventive care for individuals, families and a designated population group.
12. Use a personal pharmacopoeia appropriate for a primary care physician and describe the action, interactions and side effects of the constituent drugs.
13. Draw up management plans for common conditions seen in PHC based on sound clinical, pharmacological and theoretical principles.
14. Practice some basic communication skills e.g .counseling, consultations etc.
15. Recognize the important roles and concepts in dealing with the emergencies in general practice.
16. Demonstrate appropriate competence in decision making and problem solving in PHC.
17. Identify patients who need referral for specialized care and know how to refer them to the appropriate place.

B .MCH:

1. Demonstrate comprehensive knowledge of global and local status of mother and child and their related statistics.
2. Explain the inter-dependence and intimate relation of maternal and child groups in health and disease.
3. Analyze the underlying risk factors to common health problems of mothers and children and the vulnerability of both groups.
4. Discuss the high risk approach to MCH & its planning and implementation.
5. Recognize health service programs at various levels directed to mothers and children for managing and preventing their problems.
6. Identify areas of weaknesses and strengths in health programs directed to mothers and children and suggest alternative methods.
7. Discuss health service programs directed to handicapped children and school health children.

C .Occupational Health:

1. Describe how health is related to work.
2. Discuss the impact of work on physical and mental health of workers.
3. Explain the concept of hygiene in industry.
4. Determine the most important occupational health problems in the community.
5. Describe the main occupations in the Jazan Community and Saudi Arabia.
6. Carry out appropriate history, physical examination, diagnosis, and plan of treatment and preventive procedures.

D .Health Education:

1. Define the major concepts in health education and list the important principles and strategies in practice of health education.
2. Design a health education program on many levels including :planning, implementation, and evaluation of school health education programs, patient health education programs and community health education programs.
3. Outline the different categories of health education and outline the basic principles in each category.
4. Explain how health education has a role in control and prevention of many illnesses through showing examples.

E .Health Services Administration:

1. Outline the main concepts of health planning.
2. Describe requirements for health services programs and evaluation.
3. Describe the role of national and international health organizations.
4. Discuss the importance of medical records in health care systems.

Obstetrics &Gynaecology I

General Objectives

These courses provide learning experiences in the provision of comprehensive medical care and counseling services to adult and adolescent females .By the end of the program, the student is able to obtain a direct history and perform a physical examination including the pelvis .He is also expected to diagnose and outlines the management of typical obstetrical and gynaecological conditions encountered in general practice .While it may not be possible for students to fully develop application ability in all the above goals, they should develop an understanding of the underlying theory and to learn to apply stated goals in clinical situations.

The aim of the clinical clerkship in Obstetrics and Gynaecology is for the medical student to build on the basic science foundation that he or she has acquired over the previous five years the necessary clinical knowledge, professional skills and personal attitudes in the understanding of clinical presentation and basic management of diseases affecting the reproductive system of women of all ages .Like all branches of medicine, Obstetrics and Gynaecology is a changing discipline and, therefore, the student is urged to keep an inquisitive mind and a professional sense of responsibility for updating his or her own knowledge in order to achieve the best possible level of patient care.

Skills :Obtaining appropriate history and physical examination, requesting safe and appropriate tests and investigations, perform diagnostic and treatment procedures; safely and effectively with adequate follow up and quality assurance.

Attitudes :Maintain the highest ethical standards when dealing with patients, their families and colleagues, maintain confidentiality and professionalism, be sensitive to the needs, feelings and personal choices of his or her patients and be compassionate and kind to colleagues, patients and their families.

Knowledge: The student needs to master a strong and a comprehensive foundation in the basic and the clinical sciences related to Obstetrics and Gynaecology .The physician should acquire knowledge on a continuous and effective basis in order to be a good clinician.

Objectives

The discipline of Obstetrics and Gynaecology encompass the multitudes of diseases that affect the reproductive system of women at all ages .In order to help guide students in their study and acquisition of clinical skills during the clerkship, the specific objectives are divided into three categories.

Paediatrics I

Objectives

During his 5th year, the medical student is exposed to paediatrics in more depth.

By the end of this course, the student:

1. Acquires the skill of integrated thinking and should develop a holistic approach to clinical problems.
2. Should be able to relate the history and physical findings to specific disease entities.
3. Makes use of laboratory and other investigatory aids to reach a final diagnosis and should be able to plan the management of the patient correctly.
4. Will watch certain paediatric procedures, whenever possible, such as Lumbar puncture, biopsy taking, tuberculin testing, infusions and transfusion therapy.
5. Acquires independent habits of case-approaching and problem-solving.

Ophthalmology

General Objectives:

The student spends two weeks in the Ophthalmology rotation .During this period, it is expected that he/she develops competence in history taking, examination techniques, diagnosis and management of common health problems encountered .Training in Ophthalmology is essentially Outpatient Clinic based.

Themes

- ◆ Acute and chronic visual loss;
- ◆ Eye trauma;
- ◆ Red eye;
- ◆ Amblyopia;
- ◆ Strabismus and ocular manifestations of systematic diseases.

Anaesthesia

General Objectives

Anesthesia is a specialty that has truly grown exponentially over the past two decades .The curriculum for the specialty has accordingly expanded markedly to cover all of these topics, and has grown far more than being just responsible for resuscitation and advanced cardiac life support.

Education for the prevention and treatment of severe pain associated with surgery is a major part of anaesthesia .But anaesthetic knowledge and skills are also applied to obstetrical anaesthesia along with newborn resuscitation, cardiopulmonary and respiratory resuscitation, intensive care medicine, treatment of acute and chronic pain syndromes, and for palliative postoperative care.

The clinical clerkship in Anaesthesia will introduce the student to a body of knowledge and skills that will prepare him/her to care for these unconscious, anaesthetized and critically ill patients, and also to safely treat severe and chronic pain.

Specific Objectives

1. Assessment and preparation, including premedication, of the patient prior to anaesthesia and surgery
2. Understanding and application of essential life support measures such as intravenous access, control of the airway, and ventilation of the lungs
3. Understanding and prevention of complications resulting from anaesthesia and surgery
4. An overview of the techniques and drugs for producing general, regional and local anaesthesia
5. Assessment and immediate management of respiratory failure
6. Diagnosis and management of fluid and electrolyte disorders

7. Diagnosis and management of acid-base disorders and interpretation of arterial blood gas analysis results
8. Prevention and treatment of severe pain

Dermatology

General Objectives:

The student spends two weeks in the Dermatology rotation .During this period, it is expected that he/she will develop competence in history taking, examination techniques, diagnosis and management of common health problems encountered .Training in Dermatology is essentially Outpatient Clinic based.

Themes

- ◆ Dermatitis :bacterial, fungal and allergic.
- ◆ Diseases of hair;
- ◆ Diseases of nails;
- ◆ Eczema;
- ◆ Psoriasis;
- ◆ Melanoma skin cancer etc.

Radiology

Specific Objectives

Upon the completion of the course, the student should be able to:

1. Describe the techniques relevant for obtaining an X-ray)chest, abdomen...etc (.on a patient.
2. Identify and interpret significant abnormalities on a chest X-ray and understand how this investigation relates to the overall management of the patient.
3. Identify and interpret significant abnormalities on an abdominal X-ray and understand how this investigation relates to the overall management of the patient.
4. Describe the methods of interpretation by which disease processes can be localized on the X-ray, US, CT & MRI.
5. Recognize the radiological appearances of common medical and surgical conditions.
6. Recognize the most appropriate investigation following the routine imaging techniques for example CT, MRI and nuclear scanning etc...
7. Discuss the localization of disease processes as identified by the plain and contrast X-ray procedures.
8. Demonstrate some practical knowledge of routine imaging procedures.

Ear-Nose & Throat

Due to the prevalence of diseases of the ear, nose and throat)ENT(, special attention is given to this specialty .The student learns the basics of history taking and examination of the ear, nose and throat, performs simple procedures, reaches preliminary diagnoses and outlines the management of major ENT diseases.

Psychiatry

This program aims to involve undergraduate students in clinical experiences and learning that will meet the following goals:

- 1 -Exposure to patients and/or problems that reflect the spectrum of mental health:
 - Psycho social dimensions of patients' life and illness experiences

- Coping/adaptation to life events, throughout the life span
 - Coping with illness
 - Common emotional states and disorders
 - Maladaptive behaviours
 - Acute and chronic mental illnesses
 - Family function, adaptation to life events, challenges
 - Common presentation of family dysfunction, including violence
- 2 -Acquisition and integration of relevant concepts and knowledge in terms of:
- Presentation of common and important dysfunctions and illnesses
 - Classification and categorization
 - Natural history and outcome
- 3 -Development and application of appropriate skills and attitudes that will allow:
- Identification of mental health problems, including the use of specific tools, mental status, psychometric testing
 - Management:
 - Including behavioural and biological approaches
 - Counseling of the individual, and family
 - Co.management of coexisting illnesses
 - Family support

