Hamadan University of Medical sciences

Curriculum of

Bachelor of Medicine, Bachelor of Surgery
(MBBS)

2018

Field of Study: **Bachelor of Medicine, Bachelor of Surgery (MBBS)**

Definition of Field

Medicine is a branch of practical science aiming at health protection and promotion, diagnosis, treatment and prevention of diseases. In Hedayat Almotealemin as the oldest Persian medical book (11th century), Rabi Ibn Ahmad Akhaveini defines medicine as follow: "medicine is an occupation which views the human health, and returns what is lost, in science and practice".

Bachelor of Medicine, Bachelor of Surgery or in Latin: *Medicinae Baccalaureus,* (abbreviated in many ways, e.g. MBBS, MBChB, MBBCh, MB BChir (Cantab), BM BCh (Oxon), BMBS), is the first professional degree in medicine awarded upon graduation from medical school by universities in countries that follow the tradition of the United Kingdom., In practice, may also be awarded at graduate-level medical schools. MBBS is an undergraduate degree which stands for Bachelor of Medicine Bachelor of Surgery. After the completion of a MBBS, an individual becomes eligible to practice as a doctor or a physician. A MBBS is considered as a basic qualification which usually lasts for over four years during which the students go through many aspects of medicine and training in basically all branches of medicine. Therefore, a MBBS is considered as more of a general degree in medicine.

History of Field and Developments in World and Iran

History of Medicine in World

Academic education of medicine in world has had many developments along with the human civilizations, and scientific reference in medicine has been displaced according to the presence of different civilizations and communication and effect of the civilizations in world. Flaxner's report in the early 20th century may be a turning point of organized education of modern medicine in the world. Effect of this report and dynamics of medical education in the 20th century and contemporary age has obvious outcomes for faculties of medicine including the description of strategies and different methods of education and evaluation, organizing the educational processes, placing the medical education as a specialized field of education following documentation of evidence of processes and medicine educating organizations. Along with the developments in academic education of medicine, some considerable changes have been made in content and structure of medical science and services, sometimes along with the paradigm changes, especially in the 3rd millennium, seriously influenced the general medical education.

History of Medicine in Iran

Record of academic education of medicine in Iran refers to the period before appearance of Islam. Great famous Jundi Shapur School and hospital in the 6th century was both school and educational center of medicine and philosophy, the hospital and clinic of patients who referred to. Jundi Shapur University was one of the most important educational and research centers of the time in which many scientists and physicians lectured, studied and practiced medicine, many compiled books of Iranian scientists, and many Greek and Indian books were translated to Pahlavi, and lectured there in. The history of official medical education in Iran can be found by the study of this university. Moreover, innovation of hospital treatment method shall be known for Iranians. Hospitals of Islamic period were mainly constructed based on the samples and principles of Jundi Shapur Hospital.

Famous Azedoldole Hospitals in Shiraz and Baghdad and the next hospitals in Damascus were constructed based on the sample of Jundi Shapur. The first Islamic pharmaceutical product was made by this great medical center in the world. It was the most important world medical center upon the Arabic conquers. It was the most important and famous university in the world.

After Islam and flourish of Islamic civilization in Iran, Iranian physicians were yet the leader of academic education of medicine and compilation of reference books. Teaching place of Avicenna remains yet up to now as the oldest academy of teaching medicine which published many famous educational books (law in medicine) as this book had been a valid educational reference for physicians in the world for many centuries.

Teaching modern medicine in Iran didn't have any special organization before the establishment of Darolfonun School, and Avicenna's Law Book and Nafisi's Sharh Asbab were the accredited classic books. There was not any definite place for teaching medicine, and the students learnt natural wisdom (medicine, etc) after passing the initial requirements (reading courses of grammar and syntax, and divine wisdom in medical office of old famous physicians), and could practice the patients treatment as a physician after passing the initial requirements and acquiring brief information in medicine. It continued up to the reign of Nasereddin Shah and Amirkabir in which Dr. Kalouleh, the court physician, trained some persons, as ordered by the king, for promotion of medical education so that in 1887 Amirkabir allocated a part of king's palace for establishment of Darolfonun School, a part of which got ready in 1888. In 1911 Nasereddin Shah ordered the construction of the first hospital in Iran (Sina Hospital). It was opened in 1919 under the head of late Nazem Alateba then some other faculties were separated from Darolfonun School.

In 1918, School of Medicine was separated from Darolfonun and the late Loghmanoldoleh Adham was elected as the head since 1928, teaching medicine found more discipline and order in School of Medicine and was divided into the training courses of basic and clinical sciences. In 1934, University of Tehran establishment law was passed by the assembly, and each school was called Faculty one of which was Faculty of Medicine. After passing 100 years from establishment of the first school of medicine in Iran, 63 faculties of medicine in Iran undertake to educate the students of general medicine.

The graduates of this program will acquire the knowledge, art and skill of diagnosis, treatment and prevention of diseases by obtaining necessary knowledge in medical basic sciences and different branches of clinical sciences, practice in using these sciences in confronting the patients. In addition, it is necessary to acquire knowledge and skill, and also necessary social and professional growth for ascertaining qualification of medicine by conducted, purposeful and rethinking cooperation in professional interactions during the academic period especially during internship and clerkship.

Difference between M.D. & MBBS

MD and MBBS are both medical degrees that are intended for professionals of the medical field and yet, they are very different from one another with regards to many aspects. A MBBS is considered as a basic undergraduate degree which needs to be completed in order for a student to be qualified as a practicing physician or a doctor whereas a MD is more of a specialized Masters or a Postgraduate level degree that is obtained by individuals who wish to further specialize in the field.

A MBBS usually takes the time of about four and half years to be achieved whereas a MD only takes up the time period of two years to be completed. Also, MBBS is more of a general degree where every aspect and branch of medicine will be touched during its course whereas MD is more of a specialized degree where a student reading for one is required to specialize in a specific branch of medicine of his or her choice. Another factor which differentiates the two is that while a MBBS is more focused upon theory, a MD is more concentrated upon practical training. However, for the completion of both the degrees, many universities and institutions require the submission of a thesis or a dissertation as mandatory.

However, in order to achieve a MD, one needs to first complete a MBBS. In fact, in order to qualify for any postgraduate or a Master's degree, one needs to first be in possession of a MBBS degree. Therefore, a MBBS serves as the most basic

qualification for a medical professional to engage in higher studies or to practice as a doctor or a physician.

History and nature

The degree is currently awarded in institutions in Australia, Bahrain, Bangladesh, Barbados, Botswana, China, Egypt, Fiji, Gambia, Ghana, Guyana, Hong Kong, India, Iraq, Ireland, Jamaica, Jordan, Kenya, Kuwait, Lebanon, Libya, Malawi, Malaysia, Mauritius, Myanmar, Nepal, New Zealand, Nigeria, Pakistan, Papua New Guinea, Samoa, Saint Kitts and Nevis, Saudi Arabia, Sierra Leone, Singapore, South Africa, Sri Lanka, Sudan, Tanzania, Trinidad and Tobago, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Vanatu, Zambia and Zimbabwe.

Historically, Bachelor of Medicine was also the primary medical degree conferred by institutions in the United States and Canada, such as University of Pennsylvania, Harvard, University of Toronto, University of Maryland, and Columbia. Several early North American medical schools were (for the most part) founded by physicians and surgeons who had trained in England and Scotland. University medical education in England culminated with the Bachelor of Medicine qualification and in Scotland the Doctor of Medicine. In the mid-19th century the public bodies that regulated medical practice required practitioners in Scotland and England to hold the dual Bachelor of Medicine and Bachelor of Surgery degrees. Throughout the 19th century, North American medical schools switched to the tradition of the ancient universities of Scotland and began conferring Doctor of Medicine rather than Bachelor of Medicine. The first institution to make such a switch was King's College (now Columbia University) in New York City.

In the countries that award bachelor's degrees in medicine, however, Doctor of Medicine denotes a holder of a higher doctorate and is reserved for medical practitioners who undertake research and submit a thesis in the field of medicine. Nevertheless, those holding Bachelor of Medicine, Bachelor of Surgery are usually referred to by the courtesy title of "Doctor" and use the prefix "Dr.", whether or not they also hold a PhD or DSc. In theory the right to the use of the title "Doctor" is conferred on the medical graduate when he or she is registered as a medical practitioner by the relevant professional body, not by the possession of the MBBS degrees. The reason is found in a parallel tradition for those who are post-graduate specialists in Surgery; on acceptance into a College of Surgeons, they stop styling themselves "Doctor" and revert to "Mister" (Mr. "Miss", "Muz" (Ms.) or "Missus" (Mrs.) This curious situation, where an elevation in professional rank is signified by dropping the title of Doctor, came about because historically a "surgeon" was an

ordinary worker, usually a barber, not trained in medicine but performing dissections and surgery under the direction of a gowned academic who was the actual "doctor".

Despite their styling as two degrees, Bachelor of Medicine and Bachelor of Surgery are usually conferred together. At some institutions, such as Oxford and Cambridge, it was possible to be awarded the degrees in different years

In many countries, the degrees are awarded after an undergraduate course lasting five or six years. For example, most Chinese universities offering medical degrees provide undergraduate courses lasting six years. In some cases, a graduate in another discipline may subsequently enter a special graduate-entry medical course, reduced in duration to account for relevant material covered or learning skills acquired during the first degree. In some cases the old first-year courses (for six-year degrees) in the basic sciences of physics, chemistry and biology have been abolished: that standard has to be reached by school examinations before entry. However, in most countries a newly graduated Bachelor of Medicine and Surgery must spend a specified period in internship before they can obtain full registration as a licensed medical practitioner.

Recently, courses have been established in the Commonwealth country Australia that award the title MD.

The names and abbreviations given to these degrees depend on the institution, awarding body or country, and vary widely. This is mostly for reasons of tradition rather than to indicate any difference between the relative levels of the degrees. They are considered equivalent.

Below are described the specific names used, arranged by country.

Australia

Historically, Australian medical schools have followed the British tradition by conferring the degrees of Bachelor of Medicine and Bachelor of Surgery (MBBS) to its graduates whilst reserving the title of Doctor of Medicine (MD) for their research training degree, analogous to the PhD, or for their honorary doctorates. Although the majority of Australian MBBS degrees have been graduate programs since the 1990s, under the previous Australian Qualifications Framework (AQF) they remained categorized as Level 7 Bachelor's degrees together with other undergraduate programs.

The latest version of the AQF includes the new category of Level 9 Master's (Extended) degrees which permits the use of the term 'Doctor' in the styling of the degree title of relevant professional programs. As a result, some Australian medical

schools have replaced their MBBS degrees with the MD to resolve the previous anomalous nomenclature. With the introduction of the Master's level MD, universities have also renamed their previous medical research doctorates. The University of Melbourne was the first to introduce the MD in 2011 as a basic medical degree, and has renamed its research degree to Doctor of Medical Science (DMedSc).

Bahrain

The Medical University of Bahrain or RCSI-Bahrain is a constituent university of the Royal College of Surgeons in Ireland (RCSI) and awards its graduates the MB BCh BAO, the same degree awarded to graduates at RCSI.

Bangladesh

All medical schools in Bangladesh award *MBBS*.

University	Degree	Previous degree	Duration	Level
University of Dhaka	MBBS	A- Level	6 years (incl. 1 year intern)	Undergraduate
BSMMU	MD, MS	MBBS	5 years	Postgraduate

China

In China, medical graduates are traditionally awarded a Bachelor of Medicine (BMED) for a course of study lasting five or six years. However, as of 2011, 49 universities (including its frequently top-ranked medical schools) have been authorized by the government to award the MBBS degree as an equivalent to the BMed. The 2014–15 lists are not published by Ministry of Education. The universities listed in 2011 were:

- Anhui Medical University
- Shanxi University of Traditional Chinese Medicine
- Beihua University
- Capital Medical University
- Central South University

- China Medical University
- Chongqing Medical University
- Dalian Medical University
- Fudan University
- Fujian Medical University
- Guangxi Medical University
- Guangzhou Medical University
- Harbin Medical University
- Hebei Medical University
- Huazhong University of Science and Technology

Egypt

All Egyptian medical schools, public and private, award an *MB BCh* as the basic medical degree after completion of 6 academic years followed by a full year of obligatory clinical rotations.

Ghana

All Ghanaian medical schools award an MBChB as the basic medical degree after 6 academic years. These medical schools are Kwame Nkrumah University of Science and Technology, University of Ghana, University for Development Studies and University of Cape Coast.

Guyana

The University of Guyana awards *MB BS*. Other "offshore" United-States-linked schools in the country award the North American MD, such as Texila American University.

Hong Kong

The awarding of qualifications in Hong Kong follows the British tradition. The dual degree is awarded as:

- *MBBS* at The University of Hong Kong; and
- *MBChB* at the Chinese University of Hong Kong.

India

Medical colleges in India, accredited by the Medical Council of India, all title the degrees as *MBBS*. A medical college offers graduate degree Bachelor of Medicine and Bachelor of Surgery (MBBS). Only institutions offering MBBS course in its curriculum are referred to as a Medical Colleges. The college may teach Post Graduate as well as Paramedical courses. The admission to government MBBS

programs is highly competitive because of high subsidy and extensive hands-on experience.

The MBBS course starts with the basic pre and Para-clinical subjects such as biochemistry, physiology, anatomy, microbiology, pathology and pharmacology. The students simultaneously obtain hands-on training in the wards and out-patient departments, where they interact with real patients for five years. The curriculum aims to inculcate standard protocols of history taking, examination, differential diagnosis and complete patient Management. The student is taught to determine what investigations will be useful for a patient and what the best treatment options are. The curriculum also contains a thorough practical knowledge and practice of performing standard clinical procedures. The course also contains a 12-month-long internship, in which an intern is rotated across various specialties. Besides standard clinical care, one also gets a thorough experience of ward management, staff management, and thorough counseling skills.

The degree awarded is "Bachelor of Medicine and Bachelor of Surgery". The minimum requirements for the MBBS course are 50% marks in physics, chemistry, biology and English in the '10+2' examinations. For reserved category students, the requirement is 40%. MBBS admissions are not centralized. The admission requirements differ across universities. Generally, students who attain higher marks in the qualifying examinations and in the Medical Entrance examinations conducted by various agencies are accepted onto the MBBS course. The government is planning to come up with new medical colleges in 58 districts of India. The new colleges will add 5,800 more MBBS seats in the country.

Indonesia

In Indonesia, graduating students are awarded the degree of *S.Ked* (*Sarjana Kedokteran* / Bachelor of Medicine). At this point, the graduate is not yet a doctor, but he or she may choose to work directly as a scientist or other non-clinician professions (usually health-related). However, most S.Ked graduates will pursue the conventional path, which is to enroll in the clerkship program for another 1.5 up to 2 years.

Ireland

The medical schools in both the Republic of Ireland and Northern Ireland – Queen's University Belfast, the University of Dublin (Trinity College), some constituent institutions of the National University of Ireland (University College Dublin, University College Cork and National University of Ireland, Galway), and

the Royal College of Surgeons in Ireland— award the degrees of *MB BCh BAO*. The letters *BAO* stand for *Baccalaureus in Arte Obstetrician* (Bachelor of Obstetrics), a degree unique to Ireland which the Irish universities added in the 19th century as the legislation at the time insisted on a final examination in obstetrics. This third degree is an anachronism which is not register able with The Irish Medical Council nor the British General Medical Council (GMC). The only exception is the newly established University of Limerick graduate entry school of medicine which awards *BM BS* for Bachelor of Medicine and Bachelor of Surgery.

At the University of Dublin the preclinical course leads to an additional Bachelor of Arts (BA) degree (upgradable after three or four years to Master of Arts); as originally after this most students used to go elsewhere to complete clinical training.

LRCPI LRCSI, or simply *LRCP&SI*, denotes a holder of the historical non-university qualifying licentiates awarded jointly by the Royal College of Physicians of Ireland and the Royal College of Surgeons in Ireland to students of the RCSI's medical school under the *Irish Conjoint Scheme*. Unlike the corresponding licentiates awarded by the Royal Colleges in Scotland and England (which were external qualifications), these qualifications are still register able with the Irish Medical Council, but not with the British GMC. Students at RCSI still receive these licenses but now also receive the degrees *MB BCh BAO*, due to RCSI's status as a recognized college of the National University of Ireland. The RCSI students received a License in Midwifery (LM) from each college, in the same way that the Irish universities granted BAO degrees, so their qualifications were sometimes expressed as *L & LM, RCPI, L & LM, RCSI* or more misleadingly as *LLM, RCP&SI.*

LAH formerly denoted a licentiate of the now-defunct Apothecaries' Hall of Ireland, and is no longer awarded.

Jordan

The *Bachelor of Medicine and Surgery (MBBS)* degree is awarded in Jordan by:

- Jordan University of Science and Technology
- University of Jordan
- Mutah University
- Hashemite University
- Yarmouk University
- Al Balqa Applied University

Kenya

The national universities with medical faculties in Kenya, namely University of Nairobi, Moi University, Kenyatta University, Egerton University, Maseno university and Kenya Methodist University award *MB ChB*.

Mount Kenya University and Egerton University also award the four-year BSc. Clinical Medicine degree in addition to the five-year MBChB.

Libya

There are three major public medical universities in Libya, University of Tripoli (Tripoli), University of Benghazi (formerly Garyounis) (Benghazi), and University of Alzaweyah. The schools award the MBBCh.

The Libyan International Medical University is an accredited private medical university that awards an MBChB to its graduates.

Malaysia

The *MBBS* is awarded by five public and 14 private universities:

Public

University Malaya (UM) – October 1949

- International Islamic University Malaysia (UIAM/IIUM) – May 1995
- University Teknologi MARA (UiTM) – June 2003
- University Sains Islam Malaysia (USIM) – July 2005
- University Sultan Zainal Abidin (UniSZA) – July 2009
- University Kebangsaan Malaysia (UKM)

Private

- International Medical University (IMU) – February 1999
- Asian Institute of Medicine, Science & Technology (AIMST) University – May 2001
- Monash University Malaysia Campus – February 2007
- University Kuala Lumpur (UniKL-RCMP) – July 2008
- Melaka Manipal Medical College (MMMC)
- Cyberjaya University College of Medical Sciences (CUCMS)
- Management & Science University – International Medical School (MSU-IMS)
- MAHSA University College

- Taylor's University College
- Newcastle University – Medicine Malaysia
- University Tunku Abdul Rahman (UTAR)
- Masterskill University College of Health Sciences (MUCH)
- SEGI University College
- Insaniah University College
- Quest International University Perak
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Mexico

In Mexico, the National Autonomous University of Mexico, the National Polytechnic Institute, the Metropolitan Autonomous University, among others, grant the title of "*Médico cirujano*" (Physician-surgeon) after five years of post-high school education, plus one year of internship and one year of social service.

Myanmar

All five medical schools (UM1, UM 2, DSMA, UMM, UMMG) in Myanmar award *MB BS*.

Nepal

There are 18 medical schools in Nepal that award the MBBS degree. Nepal Medical Council (NMC) is the regulatory board that gives recognition to medical institutions for providing formal studies in medical science and training.

Kathmandu University (KU) and affiliated colleges

Kathmandu University, School of Medical Sciences (KUSMS), Dhulikhel, Kavre

- Manipal College of Medical Sciences (MCOMS), Pokhara, Kaski
- College of Medical Sciences (CMS), Bharatpur, Chitwan
- Kathmandu Medical College (KMC), Sinamangal, Kathmandu
- Nepal Medical College (NMC), Jorpati, Kathmandu
- Nepalgunj Medical College (NGMC), Chisapani, Nepalgunj
- Lumbini Medical College (LMC), Tansen, Palpa
- Nobel Medical College, Biratnagar
- Birat Medical college, Biratnagar
- Devdaha Medical college, Rupendehi

Tribhuvan University (TU) and affiliated colleges

Tribhuvan University, Institute of Medicine (IOM), Maharajgunj, Kathmandu

- Nepalese Army Institute of Health Sciences, College of Medicine, Kathmandu
- Universal College of Medical Sciences (UCMS), Bhairawaha
- National Medical College, Birgunj
- Janaki Medical College, Janakpur
- KIST Medical College, Imadol, Lalitpur
- Chitwan Medical College (CMC), Bharatpur, Chitwan
- Gandaki Medical College (GMCTHRC), Pokhara, Kaski
- Mahendranagar Medical College, Mahendranagar, Kanchanpur

Medical schools not affiliated to universities or having their own board

B.P. Koirala Institute of Health Sciences (BPKIHS), Ghopa, Dharan

- Patan Academy of Health Sciences (PAHS)-School of Medicine, Patan, Lalitpur

National Academy of Medical Sciences (NAMS), Kathmandu is an NMC-recognized medical college that has post-graduate residency (MD/MS) training programs but does not award MBBS degree.

New Zealand

The two New Zealand medical schools, Auckland and Otago, style their degrees as "MBChB" and "MB ChB" respectively.

Pakistan

In Pakistan, a medical school is more often referred to as a medical college. A medical college is affiliated with a university as a department which usually has a separate campus. Currently, there is a total of 94 medical colleges in Pakistan, 39 of which are public and 55 private. All but two colleges are listed in International Medical Education Directory.

All medical colleges and universities are regulated by the respective provincial department of health. They, however, have to be recognized after meeting criteria set by a central regulatory authority called Pakistan Medical and Dental Council (PMDC). Entrance into the medical colleges is based on merit under the guidelines of PMDC. Both the academic performance at the HSC (grades 11–12) and an entrance test like MCAT are taken into consideration for the eligibility to enter most of the medical colleges.

Saudi Arabia

Medical schools in Saudi Arabia award the *MBBS*.

Singapore

The Yong Loo Lin School of Medicine at the National University of Singapore and the Lee Kong Chian School of Medicine at Nanyang Technological University confer *MB BS*. The American Duke University has a medical programme based in Singapore (Duke-NUS Graduate Medical School), but it follows the North American model of styling its degree *Doctor of Medicine (MD)* at master's degree level.

Somalia

Amoud University, Benadir University and Hargeisa University award the MB ChB, East Africa University awards MMBS.

South Africa

The University of Pretoria, University of Cape Town, University of the Free State, University of Stellenbosch, University of KwaZulu-Natal, Walter Sisulu University and MEDUNSA award MBChB, whereas the University of the Witwatersrand styles its degree as MBBCh.

South Sudan

The University of Juba, University of Bahr El-Ghazal and Upper Nile University in South Sudan awards the MBBS degree after the successful completion of six academic years.

Sri Lanka

In 1942, the University of Ceylon was established through legislation and the MBBS degree was recognized for registration of doctors in place of the Licentiate in Medicine and Surgery (LMS).

Sudan

All Sudanese medical schools award the MBBS.

Syria

The higher education in Syria provides training to a Diploma, Bachelor, Master, and Doctorate levels (see European Education, Audiovisual and Culture Executive Agency on Higher Education: Syria.

Uganda

The five universities in Uganda that have medical schools that teach undergraduate courses, namely Makerere University, Mbarara University, Gulu University, Kampala

International University and Busitema University, all award the *MBChB* degree, after five years of study.

United Kingdom

England, Wales and Northern Ireland

While first degrees in medicine typically meet the expectations of the descriptor for higher education qualification at "level 7 (the UK master's degree)", these degrees usually retain, for historical reasons, "Bachelor of Medicine, Bachelor of Surgery" and are abbreviated to MBChB or MBBS.

Varied abbreviations are used for these degrees in these areas:

- *MB ChB* is used at the universities of Birmingham, Bristol, Buckingham, Lancaster, Leeds, Leicester, Liverpool, Keele, Manchester, Sheffield, and Warwick.
- *MB BCh* is used by the Welsh universities, Cardiff University and Swansea University.
- *MB, BCh, BAO* is used at the Queen's University, Belfast.
- *MB BS* is used at all medical schools currently or previously part of the University of London (aka The United Hospitals) (Imperial College School of Medicine, UCL Medical School, King's College London School of Medicine, Brats and The London School of Medicine and St George's, University of London), Norwich Medical School, Hull York Medical School, and Newcastle University.
- *BM BCh* is awarded by the University of Oxford.
- *BM BS* is used at the University of Nottingham, Peninsula College of Medicine and Dentistry (Exeter Medical School and Plymouth University Peninsula Schools of Medicine and Dentistry), University of Southampton, and Brighton and Sussex Medical School
- *BM* was previously awarded at the University of Southampton. However, students starting after 2012 will be awarded BMBS. Although no degree in surgery was formally awarded by Southampton, this degree was equivalent to the MB ChB; students may go on to a career in surgery the same as any other graduates in medicine and surgery.
- *MB BChir* is awarded by the University of Cambridge.

At the universities of Oxford and Cambridge, the preclinical course leads to an additional Bachelor of Arts (*BA*), degree (upgradable after three or four years to Master of Arts), after which most students used to go elsewhere (but usually to one of the London teaching hospitals) to complete clinical training. They could then take the degrees of their new university: They used to have the options of returning

to their old university to take the clinical examinations or taking one of the old non-university qualifying examinations. Most students at Oxford and Cambridge now remain in place to take their clinical training.

The Conjoint diplomas *LRCP MRCS LMSSA* were non-university qualifying examinations in medicine and surgery awarded jointly by the Royal College of Physicians of London, Royal College of Surgeons of England and Society of Apothecaries through the United Examining Board from 1994 until 1999, when the General Medical Council withdrew permission. Before 1994, the English Conjoint diploma of *LRCP, MRCS* was awarded for 110 years, and the *LMSSA* was a distinct and sometimes less-esteemed qualification. These diplomas slowly became less popular among British medical students, but as recently as 1938 only a half of them qualified with university degrees. The diplomas came to be taken mostly by those who had already qualified in medicine overseas.

Scotland

All medical schools in Scotland (Aberdeen, Dundee, Edinburgh and Glasgow) award *MB ChB*.

The University of St Andrews School of Medicine awarded *MB ChB* until the early 1970s, but since the incorporation of its clinical medical school into the University of Dundee, St Andrews now only awards a pre-clinical *BSc* or *BSc (Hons.)*, and students go to a Partner Medical School (Aberdeen, Dundee, Edinburgh, Glasgow, or Manchester where they are awarded an *MB ChB* after a further three years' study).

The Scottish Triple Conjoint Diploma of *LRCPE, LRCSE, LRCPSG* (earlier LRCPE, LRCSE, LRFPSG) is an old non-university qualifying examination in medicine and surgery awarded jointly by the Royal College of Physicians of Edinburgh, Royal College of Surgeons of Edinburgh and Royal College of Physicians and Surgeons of Glasgow, previously through a Conjoint Board and from 1994 through the United Examining Board. These qualifications are still registrable with the GMC but permission to award them was withdrawn by the Privy Council of the UK in 1999.

United States

Wisconsin

The Wisconsin Medical Society defends the use of the MD title by physicians who graduated with an MBBS and are licensed to practice medicine in Wisconsin.

Vietnam

There are many medical schools in Vietnam, such Hanoi Medical University, the Vietnam University of Traditional Medicine, and the University of Ortondo-Stomatology. Most of them require six years to receive a Doctor of Medicine degree.

West Indies

All constituent countries of the University of the West Indies (UWI) confer *MB BS*, due to the historical affiliation of UWI to the University of London. The three physical campuses are Mona in Jamaica, St. Augustine in Trinidad and Tobago, Cave Hill in Barbados with each campus having a Medical Faculty. The University of Guyana (UG) also confers "MB BS" to their medical school graduates. There are other medical schools in the West Indies, but these follow the North-American system leading to *MD*.

Zambia

All schools in Zambia that award the MBChB degree:

Government sponsored medical schools:

- University of Zambia (UNZA)
- Copper belt University (CBU)

Private sponsored medical schools:

- Cavendish University Zambia (CUZ)
- Lusaka Apex Medical University (LAMU)

Zimbabwe

The University of Zimbabwe, College of Health Sciences awards the MBChB degree, while the National University of Science and Technology awards the MBBS degree.

Bachelor of Medicine is usually awarded as general/ordinary degrees, not as honors degrees, and as such the graduate is not classified as for honors degrees in other subjects. However, at many institutions (for example the University of Aberdeen, University of Birmingham, University of Sheffield, University of Liverpool, University of Leicester and University of Manchester in England and the University of Dundee in Scotland) it is possible for the degrees to be awarded with Honors (i.e. MB ChB (Hons.)) or with Commendation, if the board of examiners recognizes exceptional performance throughout the degree course. Very few of these are awarded.

More often, it is possible to study one subject for an extra year for an intercalated honor's degree. This is usually a Bachelor of Science (BSc), Bachelor of Medical Science(BMedSci), Bachelor of Medical Biology (BMedBiol) or similar: at Oxford and Cambridge in England and Dublin in Ireland Bachelor of Arts degrees are awarded. At a few universities most medical students obtain an ordinary degree in science as well: when the University of Edinburgh had a six-year course, the third year was followed by the award of an ordinary BSc.(MedSci). In Australia, The University of Melbourne in Australia offers an Arts Degree (BA) to a medical student on the completion of two extra years of undergraduate study, and Monash University offers a Law degree (LLB); if the optional Law degree is undertaken, on completion of their degree the student may choose to do a one-year internship at a hospital and become a doctor, or spend one year doing articles to practice thereafter as a lawyer. At the University of Nottingham and the University of Southampton, both in England, all medical students on the five-year course obtain a Bachelor of Medical Sciences (BMed Sci) degree without an extra intercalated year. At Imperial College London and University College London, certain medical students are able to extend their intercalated year to an extra three years, thus temporarily exiting the MBBS course to complete a PhD. Upon completion of the PhD, the student is required to sit the remaining 2 years of the medicine course to receive his/her MBBS degree. The University, Mona in Kingston, Jamaica automatically awards a Bachelor of Medical Sciences (BMed Sci) degree to all students who have successfully completed three years of their MBBS program.

Admission Conditions and Method

Acceptance will be based on educational documents for international applicants.

Job Position of Graduates

The graduates of this program can work in the following positions:

- Health and medical centers, private medical offices and hospitals;
- Health services organizations and institutes;
- Medical sciences educational and research centers;

Philosophy (Values and Beliefs)

General practitioner is the first member for offering health services to the society. Therefore, they are always under judgment and evaluation of society, and will have the good professional specifications, and observe specialized skills and social formalities.

Human being is a multidimensional creature with various physical, mental and cultural challenges and needs, causing the human resources educational programs for providing the human health have multilayer and diverse values. General practitioner does not consider only body and its diseases, but is the only person who, as an occupation owner, can achieve the most private scope of humans needs of health services so that he may be sometimes more aware of patients' mysteries more than his accompanies. Thus, the most important value and key principle in general medical programs shall be education of committed physicians with professional ethics and decorum. Medicine is a permanently-variable domain and physician requires considering the lifetime learning and regular professional promotion for ensuring the authenticity of clinical decision making and offering services and compatibility of such proceedings with valid evidence. Therefore, growth of critical thinking and self-conducting learning skills is a requirement of general medicine program to be considered especially in program execution strategies.

Based on the principles of education, good educational design and content organization in learning fields feels necessary. Amplification of interaction of professor and student, early and purposeful contact of student with clinical environment, definition of opportunity of practice and learning the skills, and delegation of further responsibility to the students according to the educational step (basic sciences, clinical preliminaries and clerkship) with the methods of ensuring safety and preserving rights of patients are all emphasized in the program.

Perspective:

Using the last findings of medical education, General Medicine program will keep the execution by less-equipped faculties in order to help meet the acceptable world standards of medical education program in Iran and present committed, capable and responsive graduates for needs of Iranian health system to the society.

Mission:

The mission of educational program of MBBS is to describe the goals, learning opportunities and the rules the completion and execution of which fulfills the expected capabilities from graduates of this program in faculties. Considering the challenges of all beneficiaries of the program, this program presents educational goals with a functional and flexible approach in a way that all universities can train general practitioners with maximum compatibility with national program with regard to all educational specifications and resources.

We believe that the graduates of this field shall use the effective knowledge and skills in medicine to be trained in a way that they can undertake the role of the first contact point of people with health care system. The graduates of this program shall

be able to offer their professional role through direct good and presentation of services to patients or coordination of services with other services presenters and health needs and resources in the society, and meet the integrated delivery system in this case. Cares offered by the graduates were without consideration of the age, gender, species, or cultural and social level with regard to cultural, social, economic and psychological pre-fields of patients and shall promote the health of social generations to the regular, comprehensive and multidimensional extent. Also, these students shall be trained in a way that they can recognize the social problems beyond the problems of referring people applying for health services and, by correct awareness and understanding of health behaviors in the society, play the more effective role in protection of efforts and social movements performed by the society for health protection.

We believe that the graduates of this field are committed, sympathetic, humanist, and self-capable people who work in promoting the social health with upmost enthusiasm and commitment. Faculties of medicine undertake, as executives of this program, to observe the values and principles of Iranian system during the execution, and provide the fields of the human growth and sublimity for the students of this educational program based on the rich Islamic culture with regard to the human dignity, and can train the physicians committed to Islam and scientific rules.

Providing a basis for evaluation of implementation and execution of program and also determining the accessibility to all educational goals and providing the good mechanism for evaluation of graduates' capability will be the most important mission of the program.

Program Goals

Final goal of educational program of General Medicine is that the graduates of the program will be able to, by obtaining the expected capabilities, observe the professional ethics, take care of health of people, obtain the capability of information management and lifetime learning, and perform duties well in offering services in health system as the leading parties.

Professional Responsibilities of Graduates in Society

Professional duties of graduates of this field are as follow:

- Technical manager of private medical offices and authorized health services centers;
- Offering health services according to the regulations passed in Ministry of Health and Medical Education

- Offering the counseling and educating the health services to the individuals, society and target groups (by observing the special regulations for each target group)
- Partnership in all educational and research activities approved by the relevant authorities (Ministry of Health and Medical Education, or other authorized organizations employing general practitioners)
- Offering the expertise services for health issues if required, in scope of professional qualification of general practitioners
- Partnership in management processes of health

Expected Capabilities and Main Skills

Main bases of expected capabilities from the graduates of MBBS are as follows:

1- Communication skills;
2- Patient care taking (diagnosis and rehabilitation);
3- Health and prevention promotion in health system
4- Personal progress and regular learning;
5- Professional obligation, medical ethics and rights;
6- Decision making skills, reasoning and problem solving;

Educational Strategies

This program was designed using the systematic planning strategy with regard to the competency- oriented so that it is possible to execute its different parts using one or more items of the following educational strategies in the universities:

- Student- and professor-oriented education;
- Community-oriented education;
- Subject- based education;
- Outpatient- based education;
- Problem- based education;
- Task- based education;
-

Educational Methods and Techniques

This program will enjoy the different educational methods and techniques according to the learning goals of each course, the faculty facilities and conditions.
This program focuses on the proportion of methods and techniques with learning goals and fields, and therefore, any special method of technique wasn't discussed in the whole of national program. Accordingly, it is advised to, in using educational method or techniques, consider the existence of educational outcomes of each method or technique, its educational outcomes and also preparation of students and

professors for suitable execution, also economic and executive issues of application of such methods. The necessary advices are presented in some cases on special method for some courses in syllabus. Also, in program standards, educational methods are explained for presentation of further program.

Examples of Types of Methods and Techniques Used

- Discussion in small groups, training workshops, journal club and book reading, case presentation;
- Working and educational rounds;
- Personal and group practice in clinical skills learning center (Skill Lab.);
- Blended Learning, using simulation techniques according to the facilities;
- Working in laboratory according to the facilities;
- Self- study;
- Other educational methods and techniques based on the educational needs and goals;

Ethical Expectations of Learners

The students of MBBS are expected to:

- Observe the care taking of patient, legal charter of patient .
- Observe the regulations of patient safety and security (compiled by the related educational department and presented to the learners);
- Observe moral codes of mother, embryo and infants carefully (presented to the learners by educational department);
- Observe the regulations of drug safety and security including chemical and non-chemical compounds carefully (compiled by the related educational department and presented to the learners);
    - Observe the professional dress code
    - Observe the regulations of working with laboratory animals Be committed to their professional affidavit;
    - Protect the resources and equipment working with them under any condition;
    - Honor other professors, personnel, fellows and learners, and cooperate in providing an honorable honest atmosphere in workplace;
    - Observe considerations of social and professional ethics in criticism of programs;
    - Observe the research ethics items in performing the related researches;

Evaluation of Learners

The faculty educational program committee undertakes the selection of evaluation method of learners based on the learning goals and conditions of each faculty. It is expected to choose and execute the evaluation methods in a way to ensure the reliability and validity of the method and the means used so that its application finally encourages deeper and regular learning in students. The evaluation methods in this program may include:

For theoretical courses: written exams, offering exercises in written report or lecturing, oral exams and computer interactive exam.

Practical and clinical courses: observation of clinical performance of the students during the program, objective structured clinical examination (OSCE), objective structured lab. Examination (OSLE), objective structured field examination (OSFE), directly observed procedural skills (DOPS), 360-degree evaluations, portfolio evaluation including logbook evaluation and such alike;

According to the educational goals in the field of professional behavior and ethics, it is necessary to include the evaluation of students' professional behaviors in learners' evaluation program compiled by each faculty of medicine.

Passing the general examinations of basic sciences and pre-internship is necessary for entrance of students to the next educational program, and passing in practical examination of clinical qualifications of late program for the graduation.

Specifications of Program and Courses of Educational Program of MBBS
General Specifications of Program

Program: Bachelor of Medicine, Bachelor of Surgery (MBBS)

Program approved by Higher Council of Medical Sciences Planning, Ministry of Health.

Total Educational Credits: 202 credits presented as follows:

- General Courses 7.00 Credits
- Obligatory Basic Courses 69.5 Credits
- Obligatory Specialized Courses 100 Credits
- Specialized Elective Courses 4.00 Credits
- Total 202 Credits

Steps

This program includes 3 steps: Basic Sciences, Clinical Preliminaries & Clerkship.

Obligatory Courses

The obligatory courses include the core curriculum learning of which is necessary for all students of General Doctor of Medicine for meeting expected capabilities of general practitioners. Faculty of Medicine shall provide the conditions for ensuring the presentation of such courses and fulfillment of goals mentioned therein.

Obligatory courses of program are presented as follows:

1. The 1st Step (Basic Sciences):
   Basic Courses: at least 46.5 credits out of 69.5 obligatory basic credits before general examination of basic sciences;
   Entering Clinical Preliminaries is subject to passing general examination of basic sciences;

2. The 2nd Step (Clinical Preliminaries):
   Total Specialized Credits of Clinical Preliminaries: 29 credits;

3. The 3rd Step (Clerkship): minimum duration of clerkship is 21 months which may be divided into, according to the faculty program, 2 sections of Clerkship I (or student) and Clerkship II (or externship):
   Total Theoretical Credits of Clerkship (Obligatory): 31 credits;
   Total Clinical Clerkship Credits (Obligatory): 63 credits equal to 21 months;
   Total Floating Theoretical Credits between Clinical Preliminaries and Clerkship (Obligatory): 7 credits of specialized courses;
   At the end of 3rd step, students shall pass the general examination of pre-internship.

For participation in general pre-internship examination, students shall pass all general courses and all basic and specialized courses related to clinical preliminaries and clerkship.

Elective Courses

Elective courses include the non-core subjects of program providing this possibility for universities and students to present the content and opportunities of various learning as complement for helping meet the capabilities expected from the MBBS according to the academic conditions, special needs of region and also interests of educational departments and students. Total specialized elective credits during this program are 4 credits:

Table A: General Courses of MBBS

No.	Course	Credit	Hours		
			Theo.	Prac.	Total
1	Persian Literature	4	68		68
2	Physical Exercise I	1		34	34
3	Physical Exercise II	1		34	34
4	History of the religions	2	34		
		8	102	68	170

Table B: Specialized Courses of Educational Program of MBBS

Code	Course	Hours					Course Presentation	Type of Course
		Total (Credit)	Theo.	Prac.	Clerkship	Internship		
Anatomy Courses:		(15)314	196	118				
101	Introduction to Anatomy	46	38	8			Basic	Basic
102	Musculoskeletal Anatomy	50	30	20			Basic	Basic
103	Head and Neck Anatomy	37	20	17			Basic	Basic
104	Cardiovascular System Anatomy	33	17	16			Basic	Basic
105	Respiratory System Anatomy	16	8	8			Basic	Basic

106	Gastrointestinal System Anatomy	43	26	17			Basic	Basic
107	Endocrine Glands Anatomy	10	4	6			Basic	Basic
108	Nervous System Anatomy	39	25	14			Basic	Basic
109	Special Senses System Anatomy	18	14	4			Basic	Basic
110	Genitourinary System Anatomy	22	14	8			Basic	Basic
Physiology Courses:		(8)150	122	28				
111	Cell Physiology	14	14				Basic	Basic
112	Heart Physiology	10	8	2			Basic	Basic
113	Respiratory Physiology	14	10	4			Basic	Basic
114	Nerves & Special Senses Physiology	28	24	4			Basic	Basic
115	Blood Circulation Physiology	23	19	4			Basic	Basic
116	Gastrointestinal System Physiology	14	10	4			Basic	Basic
117	Hematology Physiology	7	5	2			Basic	Basic
118	Glands & Reproduction Physiology	24	20	4			Basic	Basic
119	Kidney Physiology	16	12	4			Basic	Basic
Medical Biochemistry Courses:		(5)100	70	30				
120	Molecular-Cellular Biochemistry	47	32	15			Basic	Basic
121	Discipline Biochemistry	37	22	15			Basic	Basic
122	Hormones Biochemistry	12	12				Basic	Basic
123	Kidney Biochemistry	4	4				Basic	Basic
124	Medical Genetics	(2)34	34				Basic/Clinical	Basic
125	General	(2)34	34				Basic/Clinical	Basic

	Principles of Nutrition							
126	Biophysics	(2)38	30	8			Basic/Clinical	Basic
Microbiology and Parasitology Courses:		137 (7 credits)	101	36				
127	Medical Microbiology	61	41	20			Basic	Basic
128	Parasitology	40	28	12			Basic	Basic
129	Medical Mycology	19	15	4			Basic	Basic
130	Medical Virology	17	17				Basic	Basic
Immunology Courses:		(3) 55	47	8				
131	Medical Immunology	38	30	8			Basic/Clinical	Basic
132	Clinical Immunology	17	17				Clinical	Basic
Community Medicine and Health Sciences:		171 (9.5)	152	19				
133	Principles of Health Services	26	26				Basic	Basic
134	Principles of Epidemiology	34	34				Basic	Basic
135	Biostatistics	17	17				Clinical	Basic
136	Research Methodology and Evidence-Based Medicine	26	7	19			Clinical/ Clerkship	Basic
137	Common Contagious Diseases Epidemiology in Country	17	17				Clinical/ Clerkship	Basic
138	Common Non-Contagious Diseases Epidemiology in Country	17	17				Clinical/ Clerkship	Basic
139	Principles of Demography and Family Health	34	34				Clerkship	Specialized
140	Health Psychology	(2) 34	34				Basic/Clinical	Basic

Medical Ethics Courses:		(2) 68		68				
141	Medical Ethics I	17		17			Basic	Basic
142	Medical Ethics II	17		17			Basic	Basic
143	Medical Ethics III	17		17			Basic	Basic
144	Medical Ethics IV	17		17			Basic	Basic
Specialized English Language Courses:		(6) 102	102					
145	Specialized English Language I	51	51				Basic	Basic
146	Specialized English Language II	51	51				Basic	Basic
General Pathology Courses:		(3) 51	51					
147	Generalities of Pathology and Cell Injury	9	9				Basic/Clinical	Basic
148	Edema, Tissue Repair and Hemodynamic Disorders Pathology	10	10				Basic/Clinical	Basic
149	Human Body Immunity System Disorders Pathology	8	8				Basic/Clinical	Basic
150	Neoplasia Pathology	10	10				Basic/Clinical	Basic
151	Childhood Diseases & Genetic Disorders Pathology	8	8				Basic/Clinical	Basic
152	Environmental, nutritional and Infectious Diseases Pathology	6	6				Basic/Clinical	Basic
153	Practical Pathology	(1)34					Basic/Clinical	Basic
154	Clinical Pathology	(1)18	16				Clinical/ Clerkship	Speci alize

								d
Specialized Pathology Courses:		(4.7)92	68					
155	Cardiovascular System Pathology	8	6				Clinical	Specialized
156	Respiratory System Pathology	8	6				Clinical	Specialized
157	Kidney and Upper Urinary Tracts Pathology	8	6				Clinical	Specialized
158	Gastrointestinal System Pathology	12	8				Clinical	Specialized
159	Liver and Bile Tracts Pathology	8	6				Clinical	Specialized
160	Genital System, Lower Urinary Tract, and Breast Pathology	14	10				Clinical	Specialized
161	Hematology and Endocrinology Pathology	12	10				Clinical	Specialized
162	Skin, Bones, Soft Tissues and Joints Pathology	12	8				Clinical	Specialized
163	Central and Peripheral Nervous System Pathology	10	8				Clinical	Specialized
Medical Pharmacology Courses:		(4)68	68					
164	Basic Principles of Medical Pharmacology	17	17				Basic/Clinical	Basic
165	Cardiovascular & Pulmonary Drugs Pharmacology	10	10				Clinical/ Clerkship	Basic
166	Antimicrobial Drugs Pharmacology	10	10				Clinical/ Clerkship	Basic

167	Gastrointestinal System, Hematology and Rheumatology Drugs Pharmacology	10	10				Clinical/ Clerkship	Basic
168	Endocrine Drugs Pharmacology	9	9				Clinical/ Clerkship	Basic
169	Neurology Drugs Pharmacology	12	12				Clinical/ Clerkship	Basic
Medical History and Physical Examination:		(4)136	34		102			
170	Medical History and Physical Examination I	(1)17	17				Clinical	Specialized
171	Medical History and Physical Examination Clerkship I	(1)51			51		Clinical	Specialized
172	Medical History and Physical Examination II	(1)17	17				Clinical	Specialized
173	Medical History and Physical Examination Clerkship II	(1)51			51		Clinical	Specialized
Clinical Introduction to Diseases		(18)322	290	32				
174	Clinical Reasoning of Common Signs and Symptoms Approach	(0.5)8	8				Clinical	Specialized
175	Introduction to Cardiovascular Diseases	(2)36	32	4			Clinical	Specialized
176	Introduction to Respiratory System	(2)36	32	4			Clinical	Specialized
177	Introduction to Hematology	(2)36	32	4			Clinical	Specialized
178	Introduction to	(2.1)4	36	4			Clinical	Speci

	Gastrointestinal System and Hepatology	0						alized
179	Introduction to Endocrinology and Metabolic Diseases	(2)36	32	4			Clinical	Specialized
180	Introduction to Nephrology	(1.6)30	26	4			Clinical	Specialized
181	Introduction to Rheumatology	(1.6)30	26	4			Clinical	Specialized
182	Introduction to Pediatrics	(1)17	17				Clinical	Specialized
183	Introduction to Surgical Diseases	(1)19	15	4			Clinical	Specialized
184	Introduction to Nervous System	(0.5)9	9				Clinical	Specialized
185	Introduction to Psychiatrics	(0.5)8	8				Clinical	Specialized
186	Introduction to Infectious Diseases	(1)17	17				Clinical	Specialized
187	Traditional Medicine	(2)34	34				Clerkship	Specialized

Table C: Some Elective Non-Core Specialized Courses in Educational Program of MBBS (S= Specialized)

No.	Main Group	Course	Hours (Credit)				
			Total	Theo.	Prac. Workshop	Clerkship	Type
1	Anatomy	Surgery Anatomy	(1)17	17			S
2	Physiology	Sport Physiology	(1)17	17			S
3	Biochemistry	Clinical Biochemistry	(1)17	17			S

4	Community Medicine	Health Management in Accidents	(2)34	34			S
5	Genetics	Clinical Genetics	(1)32	7	10	15	S
6	Nutrition	Nutrition in Diseases	(2)40	28	12		S
7	Immunology	Applied Immunology	(2)34	34			S
8	Pharmacology	Pharmacotherapy of Common Diseases (Therapeutics)	(2)34	34			S
9	Pharmacology	Prescription and Drugs Reasonable Prescription	(1)34		34		S
10	Clinical Groups	Principles of Physical Medicine and Rehabilitation	(1.5)	14	10	20	S
11	Clinical Groups	Patient Immunity	(2)34				S

*Maximum of total credits of elective courses for each student is 4 credits.

Educational departments of faculties can design and present the elective courses in basic sciences, clinical period or clerkship based on the university conditions and students' needs. Educational planning committee of school of medicine is responsible for determining the composition and hours of theoretical, practical- workshop and clerkship education depending on the subject, goals and content of course.

MBBS Curriculum Content

Introduction to Anatomy

Code: 101
Presentation: Basic Sciences of Medicine
Prerequisite: -
Type of Course: Theoretical (38 hours), Practical (8 hours), Total (46 hours)

Total Goals:

1- Recognizing the principles and nomenclature of anatomy and use them in imagining and describing the organs in different situations and movements of body;
2- Recognizing the general main body structures including the skeletomuscular, vascular and nervous systems, and determining the situation of important organs and body systems related to them;
3- Recognizing type of cells and general body tissues including the covering, muscular and connective tissues (with their derivatives), and getting familiar with the formation and evolution of embryo, placenta and the embryological origin of body organs;

Viewpoint:

1- Observing and honoring the human dignity;
2- Giving the members of cadaver the educational and biological importance;
3- Offering their findings and questions through study on moulage before working on cadaver;
4- Actively cooperating in group works on cadaver concurrent to learning-training processes;

Description: training the principles and method of nomenclature of anatomy, general body structures including the musculoskeletal and nervous systems, situation and relation of organs, types of cell and general body tissues including covering, muscular and connective tissues (with its derivatives) and formation and evolution of embryo and placenta;

Necessary Content:

1- Introduction (history and introducing the masters), definitions and principles of working with cadaver, expressing the moral principles governing the medicine and cadaver;
2- Anatomical status of body, plates and centers, terminology and body movements;
3- Generalities of general body systems including skeleton, joints, muscular and nervous;
4- Normal anatomy of body and variations;

5- Principles of radiological and clinical anatomy;
6- Introduction to histology and tissue studying methods;
7- Cell and cytology;
8- Covering tissue;
9- Connective tissue and fat;
10- Blood and hematopoietic;
11- Bone, cartilage and joints;
12- Muscular tissue;
13- Nervous tissue;
14- Introduction to and definitions and gametogenesis including oogenesis and spermatogenesis;
15- Ovulation, zygosis and formation of zygote (the 1st week);
16- Implantation and forming the embryonic curtains and blood relation of mother and embryo (the 2nd week);
17- Forming 3-layer embryonic disc, gastrulation and forming body organs (the 3rd week);
18- Derivatives of ectoderm, mesoderm, and nervous stenosis layers (3rd to 8th weeks);
19- Fetal period (8th to 38th weeks), placenta and embryonic curtains and twins;
20- Principles of teratology and congenital disorders;
21- Growth after birth;

Necessary Notes: the viewpoint aspects shall be mainly focused on in all anatomy courses. If skin anatomy is not trained in this course, it shall be trained in endocrinology anatomy.

Musculoskeletal Anatomy

Code: 102
Presentation: Basic Sciences of Medicine
Prerequisite: Introduction to Anatomy
Type of Course: Theoretical (30 hours), Practical (20 hours), Total (50 hours)
Total Goals:
Cognitive: recognizing the following items and importance of surface and radiological findings related to their natural and clinical conditions:

1- The bones of lower and upper organs, their situation and joints of muscles, and ligaments;
2- Types of joints, structure of joints and their function;
3- Anatomic structure and function of muscular, vascular and nervous systems and related adjacent organs;
4- Dominant myotomy of muscles and joints, sensory innervation of different zones of body;
5- Applied, surface, clinical and radiological anatomy of musculoskeletal system;

6- Evolution of musculoskeletal system;
7- Spinal column;

Skills:

1- Bones of different zones of organs and their important clinical specifications in the skeleton;
2- Bones of different zones of organs and their important clinical specifications in the radiological clichés;
3- Important clinical skeletal symptoms in body of live person and cadaver;
4- Important clinical muscles of different zones of organs and their function in live person (accessible muscles), cadaver and moulage;
5- Movement of organs in different joints on the live person;
6- Important clinical sensory innervations in organs on live body or cadaver;
7- Important clinical surface veins in organs and situation of organs nerves on cadaver and moulage;
8- Taking pulse of common veins in different zones of organs in live person;

Description: as an integrated part of educational program of basic sciences of students of medicine, this course trains the principles, concepts and considerations of scope of each zone, structure, adjacent organs, surface, radiological and clinical anatomy of musculoskeletal system and joints of organs in order to prepare students for understanding and analyzing this system;

Necessary Content :

- Spinal column;
- Osteology of upper limb;
- Scapula and armpit walls and its concepts;
- Anterior and posterior arm and elbow cavity;
- Anterior and posterior forearm;
- Hand;
- Surface, clinical and radiological anatomy of joints;
- Osteology of lower limbs;
- Anterior and interior thigh;
- Sciatic zone and anterior thigh;
- Populite cavity;
- Continuation of feet and leg;
- Surface, clinical and radiological anatomy of joints;
- Evolution of musculoskeletal system;

Necessary Notes: all anatomy courses shall focus on the viewpoint aspects. If this course shall be trained before cardiovascular and respiratory systems, it shall include the diaphragm subject.

Head and Neck Anatomy

Code: 103
Presentation: Basic Sciences of Medicine
Prerequisite: Introduction to Anatomy
Type of Course: Theoretical (20 hours), Practical (17 hours), Total (37 hours)

Total Goals:
Cognitive: recognizing the following items and importance of surface and radiological findings related to their natural and clinical conditions:

1- Anatomic structure and elements of granum and face bones;
2- Anatomic structure and situation and adjacencies of neck elements;
3- Perfusion and innervation of head;
4- Anatomic structure and situation and adjacencies of face, viscera and cavities elements;

Evolution of different sections of neck and face, and their evolutional disorders; Skill:

1- Important clinical skeletal and surface symptoms of each bone;
2- Important clinical sections of neck with related veins and nerves in cadaver and moulage;
3- Important clinical sections of face, viscera and cavities with related veins and nerves in cadaver and moulage;
4- Important clinical sections of skull and face in radiological clichés;

Description: as an integrated part of educational program of basic sciences of students of medicine, this course trains the principles, concepts and considerations of anatomic musculoskeletal system, adjacencies, and natural evolution of head and neck in order to prepare students for understanding and analyzing disorders of this zone. It also analyzes the surface and radiological anatomy of head and neck structures.

Necessary Content:

- Analyzing cranium bones;
- Analyzing facial bones;
- Skull appearances and growth and evolution of infants skull;
- Surface elements and neck fascia;
- Anterior neck triangle;
- Posterior neck triangles;
- Face and parotid;
- Temporal and infra temporal cavity;
- Evolution of bows, ends and pharyngeal cavities;
- Face, tongue and teeth evolution;

- Clinical, applied and radiological anatomy of head and neck;

Necessary Notes: it is necessary that all anatomy courses focus on the viewpoint aspects.

Cardiovascular System Anatomy

Code: 104
Presentation: Basic Sciences of Medicine
Prerequisite: Introduction to Anatomy
Type of Course: Theoretical (17 hours), Practical (16 hours), Total (33 hours)
Total Goals:
Cognitive: recognizing the following items and importance of surface and radiological findings.

Related to their natural and clinical conditions:

1- Structure of chest including bones, muscles, vessels and wall nerves;
2- Definition, divisions and contents of mediastinum;
3- Anatomic structure and situation, and heart adjacency;
4- General anatomic appearance of blood circulation system;
5- Microscopic structure of cardiovascular, lymphatic and immunity systems;
6- Microscopic difference of different sections of cardiovascular, lymphatic and immunity systems;
7- Evolution of cardiovascular sections;
8- Evolution of venous, vessel system during embryonic and after birth period;
9- Evolutional disorders of cardiovascular system;

Skills:

1- Scope of chest, ribs and sternum on live body and moulage;
2- Important clinical muscles, vessels and nerves of chest layer on cadaver and moulage;
3- Important clinical divisions and contents of mediastinum in cadaver and moulage;
4- Different heart levels, lateral sides and sections in cadaver and moulage;
5- Important main clinical vessels in blood circulation in cadaver and moulage;
6- Important clinical microscopic structure of heart, vessels and lymphatic organs under microscope;
7- Surface heart anatomy (sides, cavities and their hearing place) and vessels on live body or cadaver;

Description: as an integrated part of educational program of basic sciences of students of medicine, this course trains the principles, concepts and considerations of structure (in both microscopic and macroscopic levels), adjacency and natural evolution of heart and blood circulation system in order to prepare students for

understanding and analyzing disorders of this system. It also analyzes the surface and radiological anatomy of heart and blood circulation system.

Necessary Content :

- Ribs and sternum;
- Thorax muscles, vessels and nerves;
- Upper mediastinum;
- Mid- mediastinum;
- Posterior mediastinum;
- Main vessels of blood circulation system;
- Histology of heart and blood vessels;
- Histology of lymphatic system;
- Evolution of heart making zone, cardiac tract and heart;
- Evolution of venous and vessel system;
- Clinical, applied and radiological anatomy of cardiovascular system;

Necessary Note: it is necessary that all anatomy courses focus on the viewpoint aspects. If this course is trained before the course of musculoskeletal and respiratory systems, it shall cover the diaphragm.

Respiratory System Anatomy

Code : 105
Presentation: Basic Sciences of Medicine
Prerequisite: Introduction to Anatomy
Type of Course: Theoretical (8 hours), Practical (8 hours), Total (16 hours)
Total Goals:
Cognitive: recognizing the following items and importance of surface and radiological findings related to their natural and clinical conditions:

1- Side space and effusions, anatomic structure, situation and adjacency of respiratory system (nose, pharynx, larynx, trachea, bronchial tree and lung);
2- Histological structure of different sections of respiratory system;
3- Evolution of different sections of respiratory system;
4- Evolutional disorders of respiratory system;

Skills:

1- Different sections of respiratory system (nose, pharynx, larynx, and lung) and its side space and effusions in cadaver and moulage;
2- Different sections of respiratory system and related nerves and vessels in radiological clichés;
3- Histological structure of different sections of respiratory system under microscope;
4- Surface anatomy of lung and pleura limits on live body or cadaver;

Description: as an integrated part of educational program of basic sciences of students of medicine, this course trains the principles, concepts and considerations of this structure (in both microscopic and macroscopic levels), adjacency and natural evolution of respiratory system in order to prepare students for understanding and analyzing disorders of respiratory system. It also analyzes the surface and radiological anatomy of this system.

Necessary Content:

- Anatomic structure and adjacency of nose, pharynx, larynx and trachea;
- Anatomic structure and adjacency of lung and pleura;
- Histology of respiratory system (trachea, divisions of bronchial tree and lung);
- Evolution of respiratory system;
- Applied and radiological anatomy of respiratory system;
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Necessary Notes: it is necessary that all anatomy courses focus on the viewpoint aspects. If this course is trained before the course of musculoskeletal and cardiovascular systems, it shall cover the diaphragm.

Gastrointestinal System Anatomy

Code: 106
Presentation: Basic Sciences of Medicine
Prerequisite: Introduction to Anatomy
Type of Course: Theoretical (26 hours), Practical (17 hours), Total (43 hours)

Total Goals:
Cognitive: recognizing the following items and importance of surface and radiological findings related to their natural and clinical conditions:

1- Mouth and its elements, summary of pharynx, esophagus and its important clinical adjacencies, tissue structure and evolution of such elements and surface symptoms and 9 zones of abdomen;
2- Structure of anterior wall of abdomen (related muscles, vessels, and nerves) and inguinal canal;
3- Peritoneum, peritoneal spaces, their important clinical ends and tracts;
4- Anatomic structure and situation and important clinical adjacencies of abdomen viscera (gastric tract and attached gland);
5- Bloodletting, innervation, and lymphatic discharge of important clinical viscera of abdomen (gastric tract and attached gland);
6- Microscopic structure of important clinical sections of gastric tract and attached gland;
7- Microscopic difference of important clinical sections of gastric tract and attached gland;
8- Evolution of important clinical sections of gastric tract and attached gland;
9- Evolutional disorders of gastrointestinal system;

Skills:

1- Mouth and its elements, summary of pharynx, esophagus, and its important clinical adjacency, tissue structure and evolution of such elements, surface symptoms, 9 zones and surface situation of each of abdominal viscera in live person;
2- Peritoneal cavity and its contents in cadaver or moulage;
3- Important clinical sections of gastric tract and attached gland with related vessels and nerves in cadaver and moulage;
4- Important clinical sections of gastric tract and attached gland in radiological clichés;
5- Histological structure of important clinical sections of gastric tract and attached gland under microscope to be diagnosed and differentiated;

Description: as an integrated part of educational program of basic sciences of students of medicine, this course trains the principles, concepts and considerations of structure (in both microscopic and macroscopic levels), adjacency and natural evolution of gastrointestinal system in order to prepare students for understanding and analyzing disorders of gastrointestinal system. It also analyzes the structure of abdomen wall, abdominal cavity, surface and radiological anatomy of gastrointestinal system.

Necessary Content:

- Anatomy of mouth and salivary glands;
- Histology of mouth and salivary glands;
- Pharynx and esophagus (anatomy);
- Histology of pharynx and esophagus;
- Abdominal walls and inguinal vas;
- Peritoneum;
- Stomach and small intestine (anatomy);
- Stomach (histology);
- Large intestine, rectum and anal canal (anatomy);
- Small and large intestines (histology);
- Rectum and anal canal (histology);
- Vessels and lymph and nerves of gastrointestinal system;
- Liver, gallbladder, spleen and pancreas (anatomy and histology);
- Gastric embryology;
- Clinical, applied and radiological anatomy;

Necessary Notes: it is necessary that all anatomy courses focus on the viewpoint aspects. Abdominal walls and inguinal vas may be trained in musculoskeletal system.

Endocrine Glands Anatomy

Code: 107
Presentation: Basic Sciences of Medicine
Prerequisite: Introduction to Anatomy
Type of Course: Theoretical (4 hours), Practical (6 hours), Total (10 hours)

Total Goals:
Cognitive: recognizing the following items and importance of surface and radiological findings related to their natural and clinical conditions:

1- Important clinical anatomic structure and adjacency of hypothalamus, hypophysis, adrenal, pancreas, thyroid and parathyroid;
2- Important clinical vessels and nerves in hypothalamus, hypophysis, adrenal, pancreas, thyroid and parathyroid;
3- Important clinical microscopic structure of hypothalamus, hypophysis, adrenal, pancreas, thyroid and parathyroid;
4- Evolution of hypothalamus, hypophysis, adrenal, pancreas, thyroid and parathyroid;
5- Congenital disorders of endocrine glands;

Skill:
1- Place of hypothalamus, hypophysis, adrenal, pancreas, thyroid and parathyroid in cadaver and moulage;
2- Surface symptoms of endocrine gland on live person or cadaver;
3- Place of gland in radiological clichés;
4- Histological structure of hypothalamus, hypophysis, adrenal, pancreas, thyroid and parathyroid under microscope;

Description: as an integrated part of educational program of basic sciences of students of medicine, this course trains the principles, concepts and considerations of structure (in both microscopic and macroscopic levels), adjacency and natural evolution of endocrine glands in order to prepare students for understanding and analyzing disorders of endocrine glands. It also analyzes the structure of abdomen wall, abdominal cavity, surface and radiological anatomy of endocrine glands.

Necessary Content:
- Anatomy of hypothalamus, hypophysis, adrenal, pancreas, thyroid and parathyroid;
- Histology of hypothalamus, hypophysis, adrenal, pancreas, thyroid and parathyroid;
- Evolution of hypothalamus, hypophysis, adrenal, pancreas, thyroid and parathyroid;

- Clinical, applied and radiological anatomy of endocrine glands;

Necessary Notes: it is necessary that all anatomy courses focus on the viewpoint aspects.

Nervous System Anatomy

Code: 108
Presentation: Basic Sciences of Medicine
Prerequisite: Introduction to Anatomy
Type of Course: Theoretical (25 hours), Practical (14 hours), Total (39 hours)

Total Goals:
Cognitive: recognizing the following items and importance of their related clinical and radiological symptoms:

1- Types of classification of nervous system;
2- Natural function of neurons and glial cells;
3- Appearance, structure and function of white and gray matters of spinal cord;
4- Element of a spinal cord and nervous networks;
5- Appearance, important clinical structure and function of cores and nervous tracts of medulla oblongata, pons and midbrain;
6- Important clinical anatomic structure and function of cerebellum, Diencephalon, and brain cortex;
7- Important clinical anatomic structure and function of basal ganglia, limbic system and netted structures;
8- Structure of important clinical curtains and vessels of brain;
9- Histological structure of important clinical sections of central nervous system;
10- Evolution of important clinical sections of central nervous system;
11- Evolution disorders of nervous system;

Skills:

1- Important clinical relation of spinal cord and spinal column in longitudinal and latitudinal sections in radiological clichés;
2- Important clinical nervous dermatomes on body a live human;
3- Related spinal cord and curtains in cadaver and moulage;
4- Important clinical sections of nervous system (brainstem, Diencephalon and brain hemispheres) in cadaver and moulage;
5- Brain vessels and curtains and important clinical places of cranial nerves in cadaver and moulage;
6- Important clinical sections of nervous and related cardiovascular systems in radiological clichés;
7- Histological structure of important clinical sections of nervous system under microscope;

Description: as an integrated part of educational program of basic sciences of students of medicine, this course trains the principles, concepts and considerations of structure (in both microscopic and macroscopic levels), adjacency and natural evolution of central nervous system in order to prepare students for understanding and analyzing disorders of central nervous system. It also analyzes the surface and radiological anatomy of central nervous system.

Necessary Content:

- Classification of nervous system, vertebral canal and appearance and internal structure of spinal cord;
- Nervous tracts;
- Medulla oblongata, pons and midbrain;
- Cerebellum;
- Diencephalon;
- Brain hemispheres;
- White matter, brain interference and basal ganglia;
- Limbic system and netted structures;
- Brain vessels and curtains;
- Autonomy nervous system;
- Structure of cranial nerves;
- Forming the nervous tract;
- Histology of central nervous system;
- Applied and radiological anatomy of brain and spinal cord (making vessels and brain curtains and skill venous sinus);
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Necessary Notes: it is necessary that all anatomy courses focus on the viewpoint aspects.

Special Senses Anatomy

Code: 109
Presentation: Basic Sciences of Medicine
Prerequisite: Introduction to Anatomy
Type of Course: Theoretical (14 hours), Practical (4 hours), Total (18 hours)

Total Goals:
Cognitive: recognizing the following items and importance of their related clinical and radiological symptoms:

1- Anatomic structure of orbit, eyeball, and attachments of sight system;
2- Eye vessels and nerves, and organs of sight system;
3- Anatomic structure of external, inner and middle ears;
4- Surface and radiological anatomy of sight and hearing- balancing system;
5- Microscopic structure of eye and organs of sight system;

6- Microscopic structure of ear;
7- Evolution of different sections of sight system;
8- Evolution of different sections of hearing- balancing system;
9- Congenital disorders of sight, hearing- balancing systems;

Skills:

1- Important clinical sections of sight system (orbit, eyeball, and its organs) in cadaver and moulage;
2- Important clinical sections of hearing- balancing system (external, inner and middle ears) in cadaver and moulage;
3- Surface signs of important clinical sections of sight and hearing- balancing systems on live person or cadaver;
4- Important clinical sections of two systems in radiological clichés;
5- Eye movements in live person, and their nervous- muscular relations;
6- Histological structure of different sections of sight and hearing- balancing systems under microscope;

Description: as an integrated part of educational program of basic sciences of students of medicine, this course trains the principles, concepts and considerations of structure (in both microscopic and macroscopic levels), adjacency and natural evolution of special senses of sight, hearing and balancing systems in order to prepare students for understanding and analyzing disorders of these systems. It also analyzes the surface and radiological anatomy of special senses.

Necessary Content:

- Anatomy of orbit, eyeball and organs of sight system;
- Vessels and nerves of eye and sight system;
- External, middle and inner ears;
- Histology of ear and eye;
- Evolution of sight system;
- Evolution of sight system;
- Clinical and radiological anatomy of ear and eye;
- Nervous tracts of sight and hearing systems;

Necessary Notes: it is necessary that all anatomy courses focus on the viewpoint aspects.

Genitourinary System Anatomy

Code: 110
Presentation: Basic Sciences of Medicine
Prerequisite: Introduction to Anatomy
Type of Course: Theoretical (14 hours), Practical (8 hours), Total (22 hours)

Total Goals:
Cognitive: recognizing the following items and importance of surface and radiological findings related to their natural and clinical conditions:

1- Structure of hips including important clinical bones, joints, muscles, vessels and nerves;
2- Dimensions of hips, measurement methods and differences of men and women hips;
3- Anatomic structure and situation and adjacencies of important clinical sections of men reproductive system (internal and external structures);
4- Anatomic structure and situation and adjacencies of important clinical sections of women reproductive system (internal and external structures);
5- Blood perfusion, innervation and lymphatic discharge of important clinical sections of men and women reproductive system;
6- Dimensions and contents of perineum;
7- Surface and radiological anatomy of men and women reproductive system;
8- Microscopic structure of important clinical sections of men and women reproductive system;
9- Microscopic difference of important clinical sections of men and women reproductive system;
10- Evolution of important clinical sections of men and women reproductive system;
11- Evolutional disorders of genitourinary system;

Skills:
1- Important clinical structures of hips including bones, joints, muscles, vessels and nerves in cadaver and moulage;
2- Measurement of dimensions of hips and difference of men and women hips;
3- Important clinical sections of men reproductive system (internal and external structures) in cadaver and moulage;
4- Important clinical sections of women reproductive system (internal and external structures) in cadaver and moulage;
5- Important clinical vessels, nerves and adjacencies related to the men and women reproductive system in cadaver and moulage;
6- Perineum dimensions and contents in men and women and their difference in cadaver;
7- Different sections of men and women reproductive system in radiological clichés;
8- Histological structure of different sections of men and women reproductive system under microscope;

Description: as an integrated part of educational program of basic sciences of students of medicine, this course trains the principles, concepts and considerations of structure (in both microscopic and macroscopic levels), adjacency and natural evolution of hips and reproductive system in men and women in order to prepare students for understanding and analyzing disorders of reproductive system in men and women. It also analyzes the surface and radiological anatomy of reproductive system in men and women.

Necessary Content:

- Anatomy of hips;
- Anatomy and histology of kidney;
- Anatomy and histology of ureter, bladder and urethra;
- Embryology of genitourinary system;
- Clinical, applied and radiological anatomy of genitourinary system;
- Anatomy and histology of testicle, epididymis and Vas deferens tract;
- Anatomy and histology of prostate, seminal vesicle, and bulbourethral gland;
- Anatomy and histology of ovary, uterus and its tract;
- Perineum and surface and depth perineum space;
- Sex organ/ external sex organ of women and vagina;
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Necessary Notes: it is necessary that all anatomy courses focus on the viewpoint aspects.

Courses of Physiology

- Cell physiology;
- Respiration physiology;
- Heart physiology;
- Nerves and special senses physiology;
- Blood circulation physiology;
- Gastrointestinal system physiology;
- Blood physiology;
- Gland and reproduction physiology;
- Kidney physiology;

Cell Physiology

Code: 111
Presentation: Basic Sciences of Medicine
Prerequisite: -
Type of Course: Theoretical (14 hours), Practical (- hours), Total (14 hours)

Total Goals: expecting in this course to learn the physiological concepts, principles and mechanisms related to the cell function in any of the following cases, and recognize them in natural and physiologically modified processes;

1- Physiology, the cellular messages;
2- Cell membrane and its constituents, passage of matters through the cell membrane;
3- Rest and function potential;
4- Contraction of skeletal muscles and flat muscles;
5- Internal environment and homeostasis and role of different body systems in causing it;
6- The difference of combination of intracellular and extracellular liquid and the reason of causing it;
7- The intracellular messages;
8- The cellular membrane constituents and their function;
9- Matters transfer methods through cellular membrane;
10- Membrane rest potential and function potential;
11- Absolute and relative non-irritability process and the reason of causing it;
12- Contraction of skeletal muscle;
13- Contraction of flat muscle and its differences with the skeletal muscle;

Description: learning the general subjects related to the cell structure and their natural function, resting potential and function potential, specifications of muscular cells and their physiological function;

Necessary Content:

1- Hemostasis and body systems function regulation mechanisms;
2- Cell membrane and its elements, transferring matters through membrane and its methods (distribution, facilitated distribution, active transfer, and osmosis);
3- Membrane resting potential and its physical basis;
4- Function potential and its processes, function potential appearance and distribution;
5- Physiological analysis of skeletal muscle;
6- Muscular contraction and its mechanism;
7- Movement unit and muscular tension, classification of types of movement units;
8- Nerve- muscle synapse;
9- Stimulation- contraction couple in skeletal muscle and its mechanism;
10- Flat muscle and its types;
11- Contraction mechanism in flat muscle and its comparison with the skeletal muscle;
12- Membrane and function potentials in flat muscle and effect of hormone and local factors on it;

Heart Physiology

Code: 112
Presentation: Basic Sciences of Medicine
Prerequisite: Cell Physiology
Type of Course: Theoretical (8 hours), Practical (2 hours), Total (10 hours)

Total Goals: expecting in this course to learn the physiological concepts, principles and mechanisms related to the heart function in any of the following cases, and recognize them in natural and physiologically modified processes;

1- Heart, cavities and layers;
2- Heart muscle, heart function potential, heart muscular cell contraction;
3- Heart cycle and its processes;
4- Heart activity control;
5- Electrocardiogram diagram;
6- Blood movement path in heart in a heart cycle;
7- Physiological specifications of heart muscle and its difference and similarity with skeletal muscle;
8- Heart muscle contraction processes and mechanism;
9- Heart muscular cell function potential and its processes and differences with skeletal muscle;
10- Heart stimulus- conduction system elements, heart pulse control;
11- Heart cycle and processes;

12- Concepts of the cardiac output, ending systole volume, ending diastole volume, and pulse volume;
13- Pre and post-load and its effect on the cardiac output;
14- Sympathetic and parasympathetic system in heart function control;
15- Electrocardiogram diagram and its elements;
16- Cardiac derivations and electrodes connection method;
17- Providing P, QRS and T electrocardiogram waves;

Description: introduction to the physiological structure of heart and its elements, contraction mechanism in heart muscle, cardiac output, general electrocardiogram principles and its relationship with heart cycle and abnormal changes of electrocardiogram;

Necessary Content:
1- Physiological anatomy of heart muscle;
2- Function potential in heart muscle;
3- Contraction mechanism in heart muscle and the role of calcium ions;
4- Heart cycle and its processes;
5- Relation of electrocardiogram and heart sounds with heart cycle;
6- Cardiac output and its regulation, volume- pressure curve;
7- Effect of ions changes on the heart function;
8- The stimulus- conductive system of heart and heart signal transfer;
9- Rhythmicity of sinus- vestibular node and its mechanism;
10- Rhythm control and heart signal conduction;
11- Natural electrocardiogram and its waves;
12- Relation of heart cycle and electrocardiogram;
13- Cardiac derivations;
14- Principles of electrocardiogram vector analysis and heart axle;
15- Electrocardiogram in different steps of heart cycle;
16- Determining the heart electrical axle from electrocardiogram;
17- Deviation of heart axle in some diseases;
18- Lesion flow and its effect on the electrocardiogram;
19- Abnormal changes of electrocardiogram waves and its reasons;

Respiration Physiology

Code: 113
Presentation: Basic Sciences of Medicine
Prerequisite: Cell Physiology
Type of Course: Theoretical (10 hours), Practical (4 hours), Total (14 hours)

Total Goals: expecting in this course to learn the physiological concepts, principles and mechanisms related to the function of respiration system in any of the following cases, and recognize them in natural and physiologically modified processes;

1- Elements of respiration system (respiration tract and its divisions, air bag and types of its cells), and their duties;
2- Pulmonary ventilation;
3- Gas exchange among alveolar and blood and among blood and body cells;
4- Gas transfer in blood, respiration centers and respiration regulation;
5- Pulmonary blood circulation and its differences with instrumental blood circulation;
6- Pleura and its role in respiration system;
7- Non- respiration actions of lung;
8- Bronchial blood circulation and its difference with pulmonary blood circulation;
9- Respiration cycle, aspiration;
10- Changes of intra-pulmonary pressure and pleura pressure in a respiration cycle;
11- Surfactant secretion and its role in reducing the surface tension;
12- Lung function tests and pulmonary volumes and capacities;
13- Pulmonary ventilation, Alveolar ventilation, differences and calculation of pulmonary ventilation and Alveolar ventilation;
14- Ratio of ventilation to the blood circulation and its role in gas vessel pressure;
15- Gas exchange among blood and bubbles;
16- Gas exchange among blood and tissue cells;
17- Oxygen and CO_2 transfer ways in blood;
18- Ox hemoglobin analysis curve and its specifications;
19- Respiratory control centers and its role in respiration regulation;
20- Peripheral chemical receptors and their role in respiration regulation;
21- Central chemical receptors and their role in respiration regulation;

Description: introduction to the physiological anatomy of respiratory system, pulmonary ventilation and its mechanism, exchange and transfer of gases in lungs and tissues, and respiration regulation mechanisms and respiratory centers;

Necessary Content:

1- Lungs ventilation mechanics;
2- Pleura, its pressure and its changes in respiration;
3- Compliance of lungs and chest;
4- Pulmonary volumes and capacities;
5- Bubble ventilation and dead space;
6- Respiratory tract and its functions;
7- Reflection for cough, sneezing and speaking;

8- Pulmonary blood circulation and its specifications;
9- Pulmonary edema and its mechanism;
10- Distribution of gases in alveolar and body tissues and its effective factors;
11- Ratio of ventilation to blood circulation and its changes;
12- Concept of shunt and physiological space;
13- Oxygen transfer in blood and role of hemoglobin therein;
14- Ox hemoglobin analysis curve and its changing factors;
15- CO_2 transfer in blood;
16- CO_2 analysis curve;
17- Respiratory control;

Nerves and Special Senses Physiology

Code: 114
Presentation: Basic Sciences of Medicine
Prerequisite: Cell Physiology
Type of Course: Theoretical (24 hours), Practical (4 hours), Total (28 hours)

Total Goals: expecting in this course to learn the physiological concepts, principles and mechanisms related to the function of nerves and special senses in any of the following cases, and recognize them in natural and physiologically modified processes;

1- Structure of nervous system, synapses and nervous mediators;
2- Sensory system;
3- Types of senses and sensory routes and understanding;
4- Movement system;
5- Movement centers and movement control method by them;
6- Brain higher actions, limbic system, speech, memory and sleeping;
7- Structure and actions of autonomous system;
8- Special senses;
9- Types of neurons;
10- Types of synapses, ion events in synapse, synapse transfer;
11- Neuron communities, synapse formability;
12- Types of nervous mediator;
13- Types of nervous fibers and their conduction speed;
14- Sensory receptors, their types and roles;
15- Concept of compromise receptor potential and separation sensitivity;
16- Electrical events and receptor potential mechanism;
17- Sensory messages transfer routes to central nervous system and their differences;
18- Pain, types and its nervous routes;
19- Recurrent or distributive pains;
20- Brain and spinal column anti-pain system;

21- Eat receptors and its transfer route;
22- Structure of spinal column and organization of spinal column for performing the movement actions;
23- Reflection and its types;
24- Different sections of brainstem and the role of its elements and cores;
25- Role of vestibular system, utricle, saccule, and semi-circle tract in balance;
26- Structure of cerebellum and its practical anatomic classification;
27- Neuron circuit of cerebellum and its disorders;
28- Structure of node cores and their disorders;
29- Different sections of brain movement membrane and their duties;
30- Movement routes, spinal membrane route, relation of sense and movement;
31- Limbic system and its different sections;
32- Speech zones and its role;
33- Learning and memory;
34- Sleeping, types and specifications;
35- Brain waves and their changes in different steps of sleeping and awakening;
36- Physiological structure of autonomous nervous system;
37- Routes of sympathetic system, neuron mediators and duties of this system;
38- Routes of parasympathetic system, neuron mediators and duties of this system;
39- Difference of sympathetic and parasympathetic systems and difference of autonomy system with physical movement system;
40- Physiological structure of eye, sight receptors and its routes;
41- Physiological structure of ear and its routes;
42- Physiology of olfactory and tasting senses and its sensory routes;
43- CSF, brain- blood obstacle and their role;

Description: introduction to the physiological anatomy of nervous system, learning of sense and movement physiology, routes and nervous centers of its control and regulator, sympathetic and parasympathetic system and brain higher actions;

Necessary Content:

1- Introduction to the physiological structure of nervous system;
2- Functional levels of central nervous system;
3- Types of synapses and neurotransmitters;
4- Types of nervous fibers and their conduction and processing;
5- Conducting and processing the nervous messages, spatial and time collection;
6- Physical senses and their specifications, sensory receptors;
7- Sensory signals conduction routes and its specifications and related brain zones;
8- Pain physiology and their receptors and routes;
9- Heat receptors and its stimulus mechanism;
10- Sensory receptors of muscles and their role;

11- Different spinal reflections and their role in muscles control;
12- Movement layers, movement messages transfer routes;
13- Physiological anatomy of cerebellum, its role in controlling movements;
14- Nodes cores and their role in movement;
15- Different zones of brain cortex related to the movement actions;
16- Limbic system and its role, hippocampi and amygdala actions;
17- Memory, types and mechanisms;
18- Sleeping and its types, brain waves and changes in sleeping and epilepsy;
19- The role of sympathetic and parasympathetic systems in body and its control and role of hypothalamus;
20- Physiological anatomy of eye, sight receptors and nervous routes;
21- Physiological anatomy of ear and hearing sensory routes;
22- Olfactory and tasting receptors and its nervous route;
23- Vestibular senses and its role in balancing;
24- Metabolism and brain blood circulation and its regulation;
25- CSF and its duties;

Blood Circulation Physiology

Code: 115
Presentation: Basic Sciences of Medicine
Prerequisite: Cell Physiology
Type of Course: Theoretical (19 hours), Practical (4 hours), Total (23 hours)

Total Goals: expecting in this course to learn the physiological concepts, principles and mechanisms related to the function of blood circulation system in any of the following cases, and recognize them in natural and physiologically modified processes;

1- Basic physical concepts of blood circulation and pulmonary system;
2- Structure of blood vessels, their similarities and differences;
3- Exchange of fluids and matters between and blood and body cells;
4- Structure and duties of lymphatic system;
5- Blood pressure, effective factors and its regulation;
6- Coronary blood circulation and its control mechanism;
7- Systematic and pulmonary blood circulation, their elements and differences;
8- Relations between blood pressure, blood circulation and venous strength in relation to the Ohm and Poiseuille law;
9- Measuring blood circulation and difference of linear and tornado circulation, and determining and distinguishing it;
10- Matters between plasma and interstitial fluid;
11- Capillary filtration and effective factors in terms of Starling law;
12- Lymphatic system, its structure and actions;

13- Blood pressure, medium vessel pressure and pulse pressure and their effective factors;
14- Local control of blood circulation as short and long-term;
15- Nervous and hormone control of blood circulation;
16- Short-term and long-term regulation of blood pressure;
17- The role of kidneys and renin- angiotensin system in long- term regulation of blood pressure;
18- Hormone control of blood pressure and their role in regulating the blood pressure;
19- Changes of coronary blood circulation by changing the heart cycle;
20- Nervous and chemical regulation of coronary blood circulation;

Description: introduction to the structural and physiological anatomy of vessels, hemodynamics, exchange of matters in blood vessels, tissue blood circulation and its regulation, blood pressure and short-term and long-term regulation mechanisms, and physiology of coronary blood circulation;

Necessary Content:

1- Physical elements of blood circulation system and their specifications;
2- Hemodynamics;
3- Venous resistance and its effective factors;
4- Vasodilation in venous and vessel system and volume- pressure curve;
5- Pressure pulse and its abnormal forms;
6- Measuring the blood pressure;
7- Vessels and their actions;
8- Structure and role of arterioles;
9- Capillary filtration and its effective factors;
10- Lymph, lymphatic system and their physiological role;
11- Chronic and serious control of blood circulation and tissues and its regulation;
12- Effective factors on the blood pressure;
13- Short and long- term regulation of blood pressure;
14- Role of kidneys in regulation of blood pressure;
15- Primary and secondary hypertension;
16- Cardiac output and its regulation;
17- Cardiac output curve and its effective factors;
18- Musculoskeletal blood circulation and its control;
19- Coronary blood circulation and its effective factors;
20- Definition of shock and its steps;
21- Types of shock and their specifications;

Gastrointestinal System Physiology

Code: 116
Presentation: Basic Sciences of Medicine
Prerequisite: Cell Physiology
Type of Course: Theoretical (10 hours), Practical (4 hours), Total (14 hours)

Total Goals: expecting in this course to learn the physiological concepts, principles and mechanisms related to the function of gastrointestinal system in any of the following cases, and recognize them in natural and physiologically modified processes;

1- Structure and function of gastrointestinal system;
2- Movements of gastrointestinal system;
3- Secretions of gastrointestinal tube and their function;
4- Matters digestion and absorption process in different sections of gastrointestinal tract;
5- Functions of bile, saliva, pancreas and liver;
6- Nervous and hormone control of gastrointestinal system;
7- Swallow and its processes;
8- Mixing and impeller movements of gastrointestinal tract and their role;
9- Stomach movements and their role in food digestion;
10- Immigrant myoelectric complex and hungry contractions;
11- Stomach discharge regulation mechanisms;
12- Types of movements of small intestine, their role and their controlling mechanisms;
13- Movements of different sections of large intestine, their specifications and control;
14- Bowel reflex;
15- Secretion gland, combination of saliva and regulation of saliva secretion;
16- Types of stomach cells and type of their secretions;
17- Stomach acid production mechanism;
18- Stomach secretions regulation mechanisms and its processes;
19- Secretions of pancreas, effects and regulation;
20- Bile and its role ion fats digestion and absorption;
21- Intestinal- hepatic flow of bile;
22- Secretions of small intestine and large intestine and their regulations;
23- Carbohydrates absorption and digestion mechanism;
24- Proteins absorption and digestion;
25- Fats absorption and digestion in gastrointestinal tract;
26- Reabsorption of water, sodium, calcium, iron and vitamins in different sections of gastrointestinal tract;
27- Short, medium and long-term regulation of nutrition;

28- Role of liver in different matters metabolism;

Description: introduction to the physiological anatomy of gastrointestinal system, movements and secretion in different sections of gastrointestinal system, matters absorption mechanism in different sections of gastrointestinal tract and role of salivary glands, bile, pancreas and liver;

Necessary Content:

1- Functional anatomy of gastrointestinal system;
2- Movements of different sections of gastrointestinal system, its nervous and hormone control;
3- Desorption reflex and its control;
4- Secretions of different sections of gastrointestinal system and their regulation;
5- Bile and its role in matters absorption and desorption;
6- Secretions of pancreas and their role;
7- Absorption and desorption of carbohydrates, fats and proteins;
8- Liver functions in different matters metabolism;

Blood Physiology

Code: 117
Presentation: Basic Sciences of Medicine
Prerequisite: Cell Physiology
Type of Course: Theoretical (5 hours), Practical (2 hours), Total (7 hours)

Total Goals: expecting in this course to learn the physiological concepts, principles and mechanisms related to the function of blood in any of the following cases, and recognize them in natural and physiologically modified processes;

1- Blood and its constituents, plasma constituents and difference of plasma and serum;
2- Physiology of RBC, their synthesis and destruction, structure of hemoglobin and its synthesis method, metabolism of iron, anemia, polycythemia, and their effects on heart and blood circulation system;
3- Physiology of WBC, types of WBC, specifications and place of their synthesis and maturity, role of neutrophils and tissue macrophages in immunity system;
4- Physiology of platelets, cloning factors and mechanism of blood coagulation, hemostasis processes and role of platelets in them;

Description: introduction to the physiology of blood, RBC, WBC and platelets and their functions and mechanism of blood coagulation;

Necessary Content:

1- RBC and its production and maturity, role of erythropoietin, B12 vitamin and folic acid;

2- Formation of hemoglobin;
3- Iron metabolism;
4- Anemia and its types and its effects on blood circulation system;
5- Polycythemia and its effects on blood circulation system;
6- WBC and its types;
7- Reticuloendothelial system;
8- Inflation and role of WBC;
9- Functions of basophiles, eosinophils and macrophages;
10- Platelets and their role in blood cloning;
11- Mechanism of blood coagulation, internal and external ways;
12- Blood coagulation test, blood coagulation disorders;

Glands and Reproduction Physiology

Code: 118
Presentation: Basic Sciences of Medicine
Prerequisite: Cell Physiology
Type of Course: Theoretical (20 hours), Practical (4 hours), Total (24 hours)

Total Goals: expecting in this course to learn the physiological concepts, principles and mechanisms related to the function of glands and reproduction system in any of the following cases, and recognize them in natural and physiologically modified processes;

1- Role of endocrine glands in body hemostasis, structure of hormones, their synthesis and mechanism;
2- Hypothysis hormones and their control by hypothalamus;
3- Thyroid hormones and their metabolic effects;
4- Adrenal cortex hormones and their metabolic effects;
5- Pancreas hormones and their physiological effects;
6- Parathyroid hormone and controlling mechanisms of calcium and phosphate of extracellular liquid;
7- Sexual hormones and their role in body;

Description: introduction to the physiology of hormones and their mechanism, hormones secreted from hypophysis, adrenal, pancreas, men and women sexual gland and hormones effective on calcium and phosphate metabolism;

Necessary Content:
1- Hormones mechanism;
2- Hypophysis and its physiological relations with hypothalamus;
3- Physiological functions of growth hormone and its regulation;
4- Posterior hypophysis hormones and their physiological role;

5- Thyroid hormones production and secretion;
6- Physiological actions of thyroid hormones and its regulation;
7- Physiological functions of adrenal cortex hormones;
8- Insulin, its metabolic effects and regulation;
9- Glucagon and its physiological functions and its regulation;
10- Metabolism of calcium and phosphate and their physiological role;
11- Bone and its formation and absorption mechanism;
12- Mechanism of effect and role of parturman, vitamin D hormones;
13- Physiological anatomy of men sexual organs;
14- Testosterone, its regulation and physiological functions;
15- Physiological anatomy of women sexual organs;
16- Physiological changes in monthly cycle;
17- Physiological functions of estrogen and progesterone;

Kidney Physiology

Code: 119
Presentation: Basic Sciences of Medicine
Prerequisite: Cell Physiology
Type of Course: Theoretical (12 hours), Practical (4 hours), Total (16 hours)

Total Goals: expecting in this course to learn the physiological concepts, principles and mechanisms related to the function of kidney in any of the following cases, and recognize them in natural and physiologically modified processes;

1- Structure of kidneys, nephrons and body urinary system;
2- Kidney processes;
3- Regulating the glomeruli filtration and its effective factors;
4- Matters reabsorption and secretion in different sections of nephrons;
5- Nervous and hormone control of volume and osmolality of body fluids;
6- Body pH regulation mechanisms;
7- GFR self- regulating concept and its mechanisms;
8- Elements of juxtaglomerular system and its role in GFR self- regulating;
9- Nervous and hormone regulation of GFR;
10- Matters reabsorption and secretion in proximal tract;
11- Maximum transfer and threshold of glucose kidney disposal;
12- Matters reabsorption and secretion in Loop of Henle, distal tract and collector tract;
13- Urine condensation mechanism;
14- Effective factors on providing and keeping the upper osmolality of kidney center;
15- Role of sympathetic system in keeping the body fluids volume;

16- Mechanism of angiotensin, aldosterone, and ANP in regulating the body fluids volume;
17- Role of Smearpectors in regulating the osmolality of extracellular fluids;
18- Body fluids pH regulation mechanisms and the role of respiratory and renal system;

Description: introduction to the nephron and its elements, glomeruli filtration and its regulation, matters reabsorption and secretion in different sections of nephron, blood osmolality regulation and renal control of body acid- base;

Necessary Content:

1- Body fluids and its sections;
2- Osmosis, osmotic pressure and osmolality of body fluids;
3- Hypo and hypernathermic effect on regulating the body fluids volume;
4- Edema, reasons and factors effective on it;
5- Physiological anatomy of kidneys, nephron;
6- Urination reflex and its control;
7- Glomerular filtration and its effective factors;
8- Matters reabsorption in different sections of nephron in primitive tubule, Loop of Henle, ending tubule and collector tract;
9- Renal clearance in estimation of renal filtration and renal blood circulation;
10- Kidney mechanisms in dense and diluted urination;
11- Osmolality control and regulation of concentration of sodium of extracellular fluid;
12- Anti- urinary hormone, its role and effective factors on its secretion;
13- Regulating the extracellular potassium;
14- Controlling the concentration of calcium and its renal absorption and secretion;
15- Definition of acid and base and body defensive mechanisms against its changes;
16- Respiratory control of acid- base disorders;
17- Renal control of acid- base disorders;

Courses of Medical Biochemistry

Cellular- Molecular Biochemistry
Discipline Biochemistry
Hormones Biochemistry
Kidney Biochemistry

Cellular- Molecular Biochemistry

Code: 120
Presentation: Basic Sciences of Medicine
Prerequisite: -
Type of Course: Theoretical (32 hours), Practical (15 hours), Total (47 hours)

Total Goals: introduction to the clinical importance, structure, classification, properties and function of biomolecules including water and tampons, amino acids, carbohydrates, lipids, proteins, enzymes, vitamins, and nucleotides, and also introduction to the gene replication process using the nucleic acids;

Description: introduction to the biomolecules to learn the metabolism of such matters in discipline biochemistry; this collection of structural and functional information is presented to play role in analysis of health and disease;

Necessary Content:

1- Water and Tampons: structure of water, hydrogen bonds, Henderson- Hassel Bach equation, acid and base, definition of tampon, important body tampon, definition of acidosis and alkalosis and their clinical importance;
2- Amino Acids and Proteins: structure of amino acids, physiochemical properties, classification of amino acids, necessary and unnecessary amino acids, titration of amino acids, the 1^{st}, 2^{nd}, 3^{rd} and 4^{th} structures of proteins, proteins folding and loosing, structure and function of myoglobin, structure and function of hemoglobin, structure and function of collagen and their clinical importance;
3- Carbohydrates: definition, structure of carbohydrates, physiochemical properties, derivatives of monosaccharide, disaccharides, hemo-polysaccharides, hetero-polysaccharides, glycoproteins and their clinical importance;
4- Lipids and Lipoproteins: structure, types and physiochemical properties of fatty acids, types of lipids (tricyclic glycerol, esterified and open cholesterol, phospholipids and sphingolipids), liposomes, Miessel and emulsion, special proteins (apo-lipoproteins), types of lipoproteins and their clinical importance;
5- Enzymes: definition, classification, structure, nomenclature, active position, enzymes mechanism, determining the enzyme activity, effective factors on enzyme function, Michaelis Menten equation, types of enzymes controller,

isoenzymes, types of orderly and disorderly enzyme reaction, regulating the enzymes function and their clinical importance;

6- Vitamins: definition, classification, structure of vitamins, coenzyme role, water solvable vitamins, fat solvable vitamins, vitamins deficiency disorders and their clinical importance;
7- Nucleic Acids: constituents of nucleic acids (RNA and DNA), nucleosides, nucleotides, structure of DNA and its types, structure of RNA and its types;
8- Replication: prokaryotes and eukaryotes replication process, their repair and clinical importance;

Discipline Biochemistry

Code: 121
Presentation: Basic Sciences of Medicine
Prerequisite: Cellular- Molecular Biochemistry
Type of Course: Theoretical (22 hours), Practical (15 hours), Total (37 hours)
Total Goals: introduction to the importance of oxidative phosphorylation, metabolism paths of carbohydrates, lipids, amino acids and non-protein nitrogenized compounds and blood clinical enzymes, introduction to the quality and quantity changes of molecules and metabolites in clinical manifestations of different diseases related to each metabolism path, and also clinical importance of measuring the blood enzymes and some other fluids in body including blood, introduction to the importance of integrity of metabolism of triple matters under physiological conditions;

Description: introduction to the importance of oxidative phosphorylation, metabolism paths of carbohydrates, lipids, amino acids and non-protein nitrogenized compounds under physiological conditions, and also the role of such paths in related diseases;

Necessary Content:

1- Oxidative Phosphorylation: thermodynamic laws, free energy changes, reduction potential, electron transfer chain, osmosis chemistry theory, electron transfer chain preventers;
2- Carbohydrates Metabolism: digestion and absorption, glycolysis path, pyruvate oxidation, Krebs cycle, gluconeogenesis, glycogenesis, glycogenolysis, fructose metabolism, and galactose metabolism;
3- Amino Acids Metabolism: absorption and digestion, general amino acids catabolism reactions, urea cycle, specialized amino acids catabolism reactions (aromatic, branched and sulfur amino acids), unnecessary amino acids biosynthesis, compounds biosynthesis derived from amino acids;
4- Clinical Enzymology: the reasons of increasing and decreasing the serum activity of intracellular enzymes, necessary measures for clinical application of enzymes, clinical importance of enzymes (alkaline phosphatase, phosphatase

acid, 5 nucleotides enzyme, Gama glutamic trans peptidase, aminotransferases, lactate dehydrogenase, keratin phosphokinase, Colin stares, aldose, amylase and lipase);

5- Lipid and Lipoprotein Metabolism: fats absorption and digestion, chylomicron metabolism, VLDL metabolism, LDL and HDL metabolism, lipoproteins metabolic paths diseases, fatty acids biosynthesis path, beta oxidation of fatty acids, cholesterol biosynthesis, ketone objects biosynthesis;
6- Nucleotide Metabolism: De Novo path, purine biosynthesis, Salvage path, purines biosynthesis, regulating the purines biosynthesis path, purines catabolism, purines metabolic path diseases, De Novo path of pyrimidine biosynthesis, Salvage path of pyrimidine biosynthesis, regulating the pyrimidine biosynthesis path, pyrimidine catabolism, pyrimidine metabolic path diseases;
7- Non-Protein Nitrogenized Compounds Metabolism: hem biosynthesis, diseases related to hem biosynthesis, porphyria, hem catabolism, hem catabolism diseases;
8- Metabolic Paths Integrity: the importance of key and regulatory positions in metabolic paths, the importance of different tissues in metabolic paths, metabolic paths in liver and fatty tissue, metabolic paths in muscle tissue and after eating food, metabolic paths in fasting, metabolic paths after long hungry;

Hormones Biochemistry

Code: 122
Presentation: Basic Sciences of Medicine
Prerequisite: Cellular- Molecular Biochemistry, Discipline Biochemistry
Type of Course: Theoretical (12 hours), Practical (- hours), Total (12 hours)

Total Goals: introduction to the importance of hormones of hypothalamus, posterior and anterior hypophysis, pancreas, thyroid, cortex and central parts of adrenal gland, regulatory hormones of calcium and sexual hormones, introduction to the importance of integration of endocrine gland system as a coordinator mean and hemostasis and understanding its role in total control of body exchanges and needs;

Description: introduction to the importance and role of each hormone of hypothalamus and posterior and anterior hypophysis, hormones of pancreas, thyroid, cortex and central parts of adrenal gland, regulatory hormones of calcium and sexual hormones in related diseases;

Necessary Content:

1- An introduction to Hormones (Generalities): types of hormones classification, chemical structure of hormones;

2- Hypothalamus and Posterior and Anterior Hypophysis Hormones: chemical structure of hormones secreted from anterior hypophysis, the role of hormones secreted from the anterior hypophysis on metabolism of proteins, fats and carbohydrates, chemical structure of hormones secreted from the posterior hypophysis, the role of hormones secreted from the posterior hypophysis, diseases related to the hormones secreted from the anterior hypophysis, the growth hormone synthesis method;
3- Pancreas Hormones: endocrine hormones of islets of Langerhans in pancreas by focusing on the insulin and glucagon, chemical structure of insulin hormone, the role of insulin on metabolism of proteins, fats and carbohydrates, the function of somatoacetatin;
4- Thyroid Hormones: the processes of thyroid hormones generation and secretion, structure of thyroid hormones, mechanism of thyroid hormones synthesis, the importance of changing thyroxin to triiodothyronine, the functions of thyroid hormone by focusing on the metabolic activity of cell, and on metabolism of carbohydrates, fat and protein, the regulatory factors of thyroid hormones secretion, feedback effects of thyroid hormones on hypophysis and hypothalamus, anti- thyroid matters and their mechanism, hyperthyroidism and hypothyroidism;
5- Cortex and Central Parts of Adrenal Hormones: types of mineralocorticoids and glucocorticoids in adrenal cortex by focusing on the aldosterone and cortisol, chemical structure of adrenal cortex hormones, disorders of adrenal cortex hormones by focusing on the Addison and Cushing;
6- Adrenal Central Hormones: chemical structure of adrenal central hormones, mechanism of adrenal central hormones, regulatory factors of secretion of adrenal central hormones, function of adrenal central hormones, the effect of cortisol on metabolism of proteins, fats and carbohydrates, regulating the secretion of adrenal central hormones;
7- Calcium Regulatory Hormones: the importance of calcium in body and its advantages, generalities of calcium hemostasis, chemical structure of calcium regulatory hormones (parathyroid and calcitonin, 1- and -25 Dihydroxy-collagen-ferrosilicon), disorders related to the calcium regulatory hormones (parathyroid and calcitonin, 1- and -25 Dihydroxy-collagen-ferrosilicon);
8- Sexual Hormones: androgens as hormones secreted from testicle, chemical structure of androgens, biosynthesis and secretion of androgens, regulating the synthesis and secretion of androgens, estrogens as hormones secreted from testicles, chemical structure of androgens, androgens biosynthesis and secretion, function of androgens, progestin as hormones secreted from testicles, chemical structure of progestin, progestin biosynthesis and secretion, sexual hormones diseases;

Kidney Biochemistry

Code: 123
Presentation: Basic Sciences of Medicine
Prerequisite: Cellular- Molecular Biochemistry, Discipline Biochemistry
Type of Course: Theoretical (4 hours), Practical (- hours), Total (4 hours)

Total Goals: introduction to the clinical importance of keeping water balance, blood pH balance, and function of elements including the main and rare elements, introduction to the disorders of water and sodium imbalance, calculating the shortage of water or sodium in patients, introduction to types of acid- base disorders and also diagnosing the type of acid- base disorder from laboratory report and ABG data, calculating and using the osmolality and anion gap in determining the acid-base disorders, learning the importance and activity of about 25 elements as well as the disorders and diseases of shortage or toxicity with them;

Description: introduction to the disorders of water and sodium, acid- base in patients and their diagnostic method, and ABG interpretation method, the importance of electrolytes and sodium- potassium elements (totally 25 elements) and disorders of their shortage in body;

Necessary Content:

1- Water Metabolism: introduction and classification of main and rare elements, definition of electrolytes, the role of elements in determining the plasma water and body total water, calculating the blood osmolality, regulating and keeping the water balance in body and plasma, water balance disorders, sodium balance disorders;
2- Regulating Blood pH: types of buffer, place of activity of types of buffer, role of different buffers in regulating the blood pH, types of acid- base disorders, compensation discussion;
3- ABGs: the ABG artery blood gases, acid- base disorders diagnosis in patients using the ABG results using the various examples, diagnosing the initial disorder and diagnosis of existence or absence of compensation and whether compensation is enough or not, calculating anion gap and delta gap, using the anion gap and delta gap in diagnosing the reasons and type of acid- base disorders, calculating the delta ratio, Davenport charts and their advantages in interpreting the ABG results;
4- Other Elements and Minerals: reminding the Mendel Table and main and rate elements, addressing the fact the little or large amount of each element causes the disease, the interactions of elements in body environment, potassium and factors engaging in keeping the balance, studying other 22 elements briefly by expressing the shortage and toxicity diseases;

Medical Genetics

Code: 124
Presentation: Basic Sciences of Medicine, Clinical Preliminaries (According to Curriculum Approved by University)
Prerequisite: Cellular- Molecular Biochemistry, Cell Physiology
Type of Course: Theoretical (34 hours), Practical (- hours), Total (34 hours)

Total Goals: expecting in this course to have a good understanding of principal subjects of medical genetics, and recognize them in natural inheritance processes, common diseases and congenital disorders by knowing the most principal common techniques of medical and molecular genetics;

1- Strategic position of medical genetics in health system;
2- Types of inheritances and their similarities and differences, and also ability to distinguish them;
3- Important common human diseases in each inheritance discussed in medical genetics;
4- Types of congenital disorders, teratogens and twins, and their relation with medical genetics;
5- Application of the most important methods discussed in pre and post- birth genetic diagnosis;
6- Epigenetics and human diseases;
7- Cytogenetic and molecular genetics in human and their strong methods in diagnosis of human diseases;
8- Cellular and molecular fundamentals and origins of genetic diseases in human;
9- Principles of genetic consultation and its strategic position in determining risk and determining the disease inheritance pattern;
10- Strong methods of genetic engineering in medicine;
11- Strong methods of gene therapy and its important methods;
12- Strong methods of cancer genetics and important methods of its diagnosis and treatment;
13- Position of pharmacogenetics and individual medicine requirement;
14- Important genetic approaches and methods in prevention, recognition and treatment of diseases;

Description: introduction to the cellular and molecular genetics, types of inheritance patterns, role and application of genetic consultation in diagnosis of disease, determining the congenital pattern and risk, introduction to the strong cellular especially molecular methods in diagnosis and prevention of important genetic diseases, gene therapy, cancer genetics, epigenetics and pharmacogenetics;

Necessary Content:

1- History, position, importance, applications of medical genetics and mission;
2- Clinical cytogenetic: necessary preliminaries, chromosome disorders methods;
3- Molecular genetics and gene mutations, importance and applications;
4- Function, gene expression, and its regulation;
5- Principles of genetic consultation, tree analysis and application in mono- gene diseases;
6- Mono-gene inheritance patterns in human diseases (Mendel inheritance);
7- Mono-gene inheritance patterns in human diseases (Holandric inheritance);
8- Multi-factorial, cytoplasm and immunity inheritances;
9- Congenital disorders, teratogens and twins;
10- Genetic engineering and its applications in medicine;
11- The recent developments in pre- and post- birth molecular diagnosis;
12- Epigenetics and human diseases;
13- Gene therapy in human, the most principal common methods by introducing the important samples;
14- Application of viral and non-viral vectors in gene therapy;
15- Cancer genetics, common methods of gene therapy in cancer as well as the important samples;
16- Pharmacogenetics and medicine based on the individual specifications (individualized medicine);

Remarks: a training course of clinical genetics may be randomly designed and held in the centers with necessary qualifications by confirmation of genetic boards and general medicine. In this case, medical genetic consultation may be held in workshop form.

Genetics is omitted from the basic sciences general exam and included in pre-internship general exam.

General Principles of Nutrition

Code: 125
Presentation: Basic Sciences, Clinical Preliminaries (According to Curriculum Approved by University)
Prerequisite: Cellular- Molecular Biochemistry
Type of Course: Theoretical (34 hours), Practical (- hours), Total (34 hours)

Total Goals: at the end of course, students shall understand the principal concepts of nutrition:

1- Generalities of influence of nutrition on health;
2- Food groups of nutrients (macronutrients and micronutrients including vitamins, salts, food resources and signs of shortage and their poisoning);
3- Generalities of nutrition in different demographic groups;
4- Regulating the nutritional advices in different people;

Description: introduction to the generalities of nutrition, nutritional specifications of energy and food groups, general principles of nutrition in pregnant and feeding mothers and old people to perform the nutritional evaluation;

Necessary Content:
1- Generalities of nutrition and health and nutritional advices;
2- Food groups;
3- Carbohydrates (sweeting of sugars, food fibers, nutritional importance of types of carbohydrates and needing the carbohydrates);
4- Fats (nutritional importance of types of fats and needing fats);
5- Proteins (complete and incomplete proteins, quality of proteins, balance of nitrogen and needing the proteins);
6- Energy;
7- Fat soluble vitamins (food resources, shortage and poisoning);
8- Water soluble vitamins (food resources, shortage);
9- Minerals and water (food resources, shortage);
10- Obesity and general malnutrition (diseases of malnutrition);
11- Nutrition in pregnant and feeding mothers;
12- Nutrition in children;
13- Old people nutrition;
14- Evaluating the nutrition status;
15- Principles of regulating diet;

Remarks: this course may be presented in the basic science period, or clinical preliminaries.

Questions of this course are omitted from the basic sciences general exam and included in pre-internship general exam.

Biophysics

Code: 126
Presentation: Basic Sciences, Clinical Preliminaries (According to Curriculum Approved by University)
Prerequisite: -
Type of Course: Theoretical (30 hours), Practical (8 hours), Total (38 hours)

Total Goals:

1- Introduction to the physical fundamentals and bases of imaging methods and measuring the anatomic and physiological changes into the human body;
2- Introduction to the selection of common diagnostic imaging methods in patients;
3- Introduction to the analysis and interpretation of changes of diseases using the diagnostic equipment;

Description: introduction to the physics and generalities of diagnostic methods and related equipment to select some algorithms in the next steps of education and understand the application of diagnostic methods especially the imaging for patients, and diagnose the difference of noise and visual errors from disease and pathological changes after receiving the results and images of patients;

Necessary Content:

1- Optical Physics:
   - Importance and properties of visible light, infrared ray, ultraviolet ray and their medical consumptions;
   - Physical study of eye, diagnosis and correction of global disorders;
   - Fundamentals of astigmatism physics and its correction methods;
   - Physical fundamentals of specifications of retina, sight field, perspicuity, seeing the colors, ophthalmoscopy;
   - Physical fundamentals of seeing by two eyes, hyperopia, understanding the objects magnificence;
   - Physical fundamentals of common lens equipment used in medicine;
   - Practical program;
2- Ultrasound waves and its medical consumptions:
   - Production and properties of ultrasound waves;
   - Chemical and biological properties of ultrasound waves;
   - Application of ultrasound waves in medicine;
   - Physical fundamentals of common ultrasound equipment in medicine;
   - Practical program;
3- Consumptions of frequency currents in medicine:
   - Production and properties of high frequency currents;

- Physiological properties and applications of high frequency currents in medicine (electrical operation and heat therapy);
- Side effects of electricity on body and prevention ways;
- Fundamentals of magnetic resonance imaging (MRI), image formation mechanism;
- Different contrasts in MRI;
- Diagnostic applications of MRI;
- Physical fundamentals of common equipment of high frequency currents used in medicine;

4- Nuclear medicine:
   - Structure of atom and core energy;
   - Radioactivity and its properties (ionizing rays);
   - Natural radioactivity;
   - Neutrons, artificial radioactivity;
   - Radioactivity diagnosis and measurement;
   - Marked molecules and its medical applications;
   - Applications of radioisotopes in diagnosis and treatment;
   - Practical program;
5- Physical fundamentals of radiology and radiotherapy:
   - Nature and properties of X ray in diagnosis and treatment;
   - X ray generators;
   - X ray absorption and measurement;
   - Radiobiology;
   - Protection and principles of X and Gamma rays dosimetry;
   - Practical program;
6- Robotic applications in medicine;

Remarks: this course may be presented in the basic science period, or clinical preliminaries.
Questions of this course are omitted from the basic sciences general exam and included in pre-internship general exam.

Courses of Microbiology and Parasitology

Medical Bacteriology
Medical Parasitology
Medical Mycology
Medical Virology

Medical Bacteriology

Code : 127
Presentation: Basic Sciences
Prerequisite: -
Type of Course: Theoretical (41 hours), Practical (20 hours), Total (61 hours)

Total Goals:
Cognitive Goals: expecting at the end of the course to achieve the following skills:

1- Recognizing the position of microbes in nature, their nomenclature and classifications, difference of prokaryote and eukaryote cells;
2- Introduction to the anatomical, biochemical structure, metabolic specifications, growth physiology and genetic exchanges among microorganisms;
3- Recognizing the effect and influence of types of antimicrobial matters (antibiotics, etc.), chemicals and physical agents on microorganisms and mechanisms of pharmaceutical resistance of pathogenic bacteria;
4- Understanding the concepts of natural micro florae of human body, hospital infections, disease mechanisms by microbes, transferring infection and pathogens stability in body;
5- Introduction to the classification of families and different types of bacteria causing disease in human;
6- Recognizing the most important pathogenic indices and infection mechanisms by bacteria;
7- Recognizing the selection of sample, sampling time and sending sample to the laboratory for diagnosing the pathogenic bacteria;
8- Recognizing the contamination cases in results of examinations;

Skill Goals: expecting the students at the end of course to do the following items:

1- Preparing smear of samples prepared from pharynx, lesions, urine and mucus, and staining them in hot method;
2- Culturing the clinical samples prepared from lesions, urine, stool and mucus;
3- Performing the antibiogram test by selecting the suitable antibiotics and interpreting its results;

Description: introduction to the general concepts of bacteria and their classification especially important human pathogenic bacteria and learning the different aspects of infectious bacterial diseases in an applied form accordingly.
Introduction to the pathogenicity ways, their contagion method and the control, prevention and eradication of bacterial diseases by acquiring information of useful and useless effects of microorganisms on the human life, familiarity with types of pathogenic bacteria, classification, structure, physiology of growth, metabolism, biochemical, genetics, antigenic and molecular specifications;

Necessary Content : in tables of theoretical topics of bacteriology, and necessary content of practical activities of Bacteriology Lab.;

Theoretical Topics of Bacteriology:

1- Classification of microorganisms, anatomical and chemical structure of bacteria;
2- Growth physiology and microorganisms metabolism;
3- Microorganisms genetics;
4- Antibiotics (function mechanism and classification);
5- Resistance mechanisms to antibiotics;
6- The effect of chemical and physical factors on microorganisms;
7- Micro biome, normal fluorine and probiotics, relation of parasite and host;
8- Mechanisms of disease by bacteria, types of infection (hospital and out of hospital);
9- Positive gram coccus;
10- Negative gram coccus;
11- Corynebacterium, listeria, lactobacillus, actinomycetes, and Nocardians;
12- Enterobacteriaceae (Escherichia, Proteus, enterobacter, Klebsiella, and Sarasia);
13- Enterobacteriaceae (Salmonella, Shigella, and Yersinia);
14- Mycobacterium tuberculosis, mycobacterium lapara and other mycobacteriums;
15- Pseudomonas, Acinetobacter and other non-fermenters;
16- Vibrionacea, campylobacter and helicobacter;
17- Bacillus (Bacillus Anthraise), and negative anaerobic gram Bacillus (bacteroides);
18- Clostridium tetani and clostridium botulinum, clostridium perfringens and clostridium diphyles;
19- Brucella, homophiles, chlamydia and mycoplasma;
20- Triponama, borelia, leptospira, bordtella and legionella;
21-

Necessary Content of Practical Activities of Bacteriology Lab.:

1- Safety items in laboratory;
2- Clinical sampling methods;

3- Preparing smear and gram staining and Giemsa and Wright;
4- Culture of selected positive gram coccus and negative gram bacillus;
5- Observing the smears stained for common diseases;
6- Laboratory diagnosis of common bacteria and interpreting the examinations;
7- Interpreting the antibiogram samples;

Medical Parasitology

Code: 128
Presentation: Basic Sciences
Prerequisite: -
Type of Course: Theoretical (28 hours), Practical (12 hours), Total (40 hours)

Total Goals: introduction to the parasitic agents causing diseases and the important pathogenic parasites according to the protozoa and helminth groups, morphology, life cycles, transfer ways, reservoirs, hosts, the role of arthropods as the biological and mechanical vectors in their transfer, pathogenicity and specialized clinical signs, introduction to the geographical distribution of each parasitic infection, status of their appearance and outbreak especially in different districts of Iran, and also the methods of prevention and control of parasitic diseases;

Description: introduction to the etiological factors, life cycle, transfer way, pathogenicity, sampling methods, requesting for type of examination and laboratory diagnosis, parasitic diseases prevention and control methods (by mentioning their clinical items);

Necessary Content:
1- Generalities of parasitology;
2- Generalities of medical helminthology;
3- Hepatic trematodes;
4- Pulmonary trematodes;
5- Intestinal trematodes;
6- Blood trematodes;
7- Intestinal cestoda;
8- Larva cestoda disease;
9- Nematodes;
10- Blood- tissue nematodes;
11- Generalities of protozoology;
12- Blood- tissue protozoal diseases agents;
13- Sexual- intestinal protozoal diseases agents;
14- Common parasites including toxoplasma, Leishmania, malaria, opportunist protozoa, hedatic cyst;
15- Interpreting the serological tests of parasitic diseases;
16- Principles of sampling for parasites;

17- Generalities of arthropods;
18- Arthropods control methods;

Practical Parasitology:

1- Observing smear ready for common parasites and their egg under microscope as case presentation;
2- Sampling methods and preparing smear of parasites and their microscopic analysis;
3- Interpreting the serological tests of parasitic diseases (case presentation and real tests);

Medical Mycology

Code: 129
Presentation: Basic Sciences
Prerequisite: -
Type of Course: Theoretical (15 hours), Practical (4 hours), Total (19 hours)

Total Goals: introduction to the important pathogenic fungi, recognizing the mycotic factors causing diseases, introduction to the geographical distribution of each mycotic infection and status of their appearance and outbreak especially in different districts of Iran, diagnosing the diseases of important fungi using the slide, and explaining the prevention and control methods of each mycotic disease;

Description: introduction to the etiological factors of mycotic diseases, their transfer way, pathogenicity, and their pre-notice, laboratory diagnosis and requesting for type of examination and also introduction to the principles of treatment using the common effective drugs in country and also introduction to the prevention and control methods of such diseases;

Necessary Content:

1- Generalities of mycology;
2- Agents of surface mycotic diseases;
3- Agents of cutaneous mycotic diseases;
4- Agents of subcutaneous mycotic diseases;
5- Agents of systematic mycotic diseases including the mycotic infections in immunity deficiency patients;
6- Food molds, candida albicans, Aspergillus, mucor mycosis, tinea and other common cases;
7- Morphological and biological specifications of mycotic agents;
8- Life cycle of mycotic agents, biological and environmental factors and other effective personal behaviors on setting their evolution;
9- Main reserves, final host and intermediate of each parasite and the biological role of vectors in development and evolution of mycotic agents;

10- Epidemiological specifications, geographical distribution and clinical and pathological signs of mycotic diseases;
11- Types of laboratory diagnosis methods of mycotic infections;
12- Principles of mycotic diseases treatment and their sensitivity to the common drugs;
13- Pathogenic mycotic agents prevention and control methods;

Practical Topics:

- Observing pre-prepared smear of common fungi under microscope as clinical case presentation;
- Sampling, preparing smear in KOH method and microscopic analysis and diagnosis of sample for fungi;

Medical Virology

Code: 130
Presentation: Basic Sciences
Prerequisite: -
Type of Course: Theoretical (17 hours), Practical (- hours), Total (17 hours)

Total Goals:

1- Introduction to generalities of medical virology;
2- Introduction to the structure, specifications, characteristics and replication of pathogenic viruses in terms of clinical phenomena (signs, pathology, appearance and epidemiology), and viral infections in human;
3- Introduction to the methods of diagnosis and application of virology methods in recognizing the clinical and epidemiological phenomena of viral infections;

Description: introduction to the generalities of medical virology, specifications of pathogenic viruses, methods of diagnosis and epidemiology of viral infections in Iran;

Necessary Content :

1- Generalities of Virology:
    - Definition and history;
    - Structure and molecular biology of viruses;
    - Properties of viruses;
    - Replication of viruses;
    - Relation of viruses and host cell;
    - Laboratory methods of diagnosing the viral diseases;
    - Bacteriophages;
2- Systematic Virology:
    - Classification of viruses;
    - Specifications and pathogenic role of DNA viruses in diseases;
    - Specifications and pathogenic role of RNA viruses in diseases;

- Common pathogenic viruses in body system;
- Role of viruses in carcinogenesis;
- General mechanisms of effect of drugs on viruses;

Medical Immunology

Code: 131
Presentation: Basic Sciences, Clinical Preliminaries
Prerequisite: -
Type of Course: Theoretical (30 hours), Practical (8 hours), Total (38 hours)

Total Goals:
Cognitive Goals: at the end of this course, students will get familiar with the fundamentals of immunology, organs, molecules and cells engaging in the immunity system, and understand the different mechanisms of immunity system in confronting the foreign agents. They will also learn the immunity response in different diseases including the infectious diseases, cancer, self-immunity, and connection, and understand the immunity mechanisms in recognizing and diagnosing types of diseases.

Skill Goals: introduction to performing the immunity and serology diagnostic methods and their application in diagnosing types of diseases, analysis of immunity and serology tests (in terms of being positive and negative) and performing types of immunity and serology tests including the agglutination, precipitation, hemolysis, etc.;

Description: introduction to the basic fundamentals of immunology, cells and molecules engaging in immunity system, the role of immunity system in different diseases and function of different elements of immunity system (inherent and acquisitive immunity), recognizing types of effective immunity cells including the inherent and specialized immunity cells, introduction to the T and B lymphocytes, and their response to antigen, introduction to tolerance and its role in self-immune diseases, introduction to the immunity response to pathogens, function of immunity system in implant, immunity response in cancer, immunity response in hypersensitivity and allergic reactions, using the molecules, antibodies and immunity cells in diagnosing and treatment of types of diseases;
Practical part of this course is designed for introduction to the common serology diagnostic methods for diagnosis of infectious diseases (parasitic, bacterial, viral and mycotic), blood groups, autoimmune diseases, cancer. In this course, students will perform the simple laboratory serological methods in laboratory, and observe the interpretation of results of examinations, and get familiar with the more specialized tests and their application in diagnosis of diseases in written form.
Necessary Content:
In the table of theoretical topics of medical immunology;

Notes: questions of this course are omitted from basic sciences general exam and included in pre-internship general exam.

Theoretical Topics of Medical Immunology:

1- Generalities of immunity system: history, generalities of inherent and specialized immunity, generalities of humoral and cellular immunity, types of immunization and immunity;
2- Cells and tissues of immunity system, mucous and skin immunology: cells, an address to the lymphocytes, monocytes and golonolocytes, tissues: central and peripheral lymphatic organs, introduction to anatoxic and cellular structure of mucous systems, introduction to the structured and dispersed mucous lymphatic organs, the role of IgA, mother milk immunity;
3- Introduction to the antigens and their specifications: immunogen, hopten, tolergen, allergen, superantigen and mitogen, antigens dependent on thymus and independent from thymus;
4- Introduction to antibodies and their types: structure of antibody, types of immunoglobulins, functions of immunoglobulins;
5- Inherent immunity and inflation: recognition method in inherent immunity, cellular receptors and inherent immunity floating, inherent immunity cells, inherent immunity molecules, chronic and serious inflation process;
6- Complement system and its role in defending the body: complement activation ways, complement functions, preventive receptors;
7- Introduction to MHC and immunogenetic equipment: MHC genetic principle and its digestion, structure of MHC molecules, maintenance method, their role in immunity system;
8- Phagocytosis process and antigen supply to T cells: phagocytosis, respiratory explosion, antigen processing and supply process in endocytic and cytosodisk routes;
9- Humoral immunity mechanisms: abstract of evolution of B lymphocytes, B lymphocytes activation method, the role of T lymphocytes in humoral immunity, antigen omission process in humoral response;
10- Cellular immunity mechanisms: abstract of evolution of T lymphocytes, T lymphocytes activation method, different patterns of cellular immunity response, antigen omission process in cellular response;
11- Tolerance and self- immunity mechanisms: types of action (central and peripheral), central tolerance in B and T cells, peripheral tolerance in B and T cells, tolerance fracture mechanisms by wade and self-immunity;
12- Cytokines;

Practical Topics of Medical Immunology:

1- An introduction to the serology methods and antigen and antibody reactions;
2- Performing C-Reactive Protein (CRP) test and information of applications and interpretation;

3- Performing Rheumatoid Arthritis Latex (RA-Latex), introduction to applications and interpretation, and also its false negative and positive items;
4- Performing Vidal, Wright test and information of applications and interpretation, introduction to its false negative and positive items;
5- Performing the ABO system direct and indirect grouping test and introduction to their application, performing Rh-du test and information of its application in blood transfusion;
6- Demonstration of direct and indirect Coombs tests and introduction to their application;
7- Performing cross match tests (blood group compatibility) and introduction to its interpretation and application, observing the factors necessary in blood transfusion;
8- Anti- CCP for arthritis rheumatoid;
9- RPR for syphilis;

Diagnostic tests of different diseases are explained and practically performed according to active and passive agglutination, latex agglutination- Elisa flocculation.

Clinical Immunology

Code: 132
Presentation: Clinical Preliminaries
Prerequisite: Medical Immunology
Type of Course: Theoretical (1 credit, 17 hours), Practical (- hours), Total (1 credit, 17 hours)

Total Goals:

1- Introduction to the fundamentals of applied immunology;
2- Introduction to the importance and applications of immunology in treatment of types of diseases;
3- Introduction to the immunity molecules and cells presently used as diagnosis and treatment of different diseases;

Description: introduction to the importance and application of immunology, the role of immunity system in different diseases, introduction to the immunopathogenesis of self-immune diseases and infectious diseases, immunopathogenesis of organs implantation, immunopathogenesis of cancer and application of immunological factors in its treatment, immunopathogenesis of allergic and hypersensitivity diseases, using molecules, antibodies and immunity cells in diagnosis and treatment of types of diseases;

Necessary Content:

1- Vaccination and immunization;
2- Fast allergic and hypersensitivity diseases, hypersensitivity type II, III, IV;

3- Immunohematology;
4- Self-immunity diseases;
5- Cancer and types of common immunotherapies;
6- Immunity responses against bacteria, viruses, parasites and fungi;

Remarks:
Non-core subjects of immunology:

- Nutrition and sport immunology;
- Psychoneuroimmunology;
- Aging immunology;
- Immunotherapy and its types;
- Implant immunology;
- Pregnancy immunology;

These topics are presented in General Doctorate Degree in Medicine as Advanced Applied Immunology for 9 hours (0.5 credits).

Courses of Community Medicine and Health Sciences

Principles of Health Services
Principles of Epidemiology
Biostatistics
Research Methodology and Evidence-Based Medicine
Common Non-Contagious Diseases Epidemiology in Country
Common Contagious Diseases Epidemiology in Country
Principles of Demography and Family Health

Principles of Health Services

Code: 133
Presentation: Basic Sciences of Medicine
Prerequisite: -
Type of Course: Theoretical (26 hours), Practical (- hours), Total (26 hours)

Total Goals: introduction to the generalities and history of health in Iran and world, and types of health systems in the world, understanding the concepts of health and disease, and recognizing the threatening dangers of health and development of health in the world and Iran, introduction to the concept of health for all people and prevention levels, using the initial health cares, managing and evaluating the patients according to the prevention levels, introduction to the role of national and transnational organizations in the health development, and also the initial concepts of health education and health promotion, connecting the health relationship, training the patients in the field of health services, introduction to the goals of sustainable development, and recognizing the role of effective social factors on health to use them in patient management, introduction to the importance of environmental health, and professional health, and recognizing their role in population health promotion, introduction to the health of foodstuff and role of nutrition in health and using their principle in the related fields, understanding the importance of oral and dental health, introduction to the valuation of health technology, recognizing the immunization program and conducting its execution;

Description: introduction to the initial and infrastructural principles of health to protect and promote the individual and population health as a physician;

Necessary Content:

1- Generalities and history of public health in Iran and world, development including millennium development, HFA, universal health coverage (UHC), primary healthcare (PHC) and goals (MDGs);
2- Concepts of health and disease and prevention levels;
3- Primary healthcare system I (PHC);
4- Primary healthcare system II (PHC);

5- Health structure in world and Iran based on the indices;
6- Local, national and transnational organizations related to the health;
7- Environmental factors related to the health (air, water, solid wastes and wastewater, foodstuffs);
8- Social factors related to the health;
9- Workplace health and safety;
10- Principles and generalities of immunization;
11- Principles of health services management;
12- Health education and promotion;
13- Health services salary receivers;
14-

Remarks: social factors determining the health and goals of sustainable development of annual report of world health organization;

Principles of Epidemiology

Code: 134
Presentation: Basic Sciences of Medicine
Prerequisite: -
Type of Course: Theoretical (34 hours), Practical (- hours), Total (34 hours)

Total Goals: expecting to meet the following goals:

1- Introduction to the definition, applications, history and concepts of epidemiology;
2- Understanding and using the diseases transfer, epidemic diagnosis and its control method;
3- Understanding the concepts of disease appearance, health and disease sizes and healthcare system;
4- Calculating and interpreting the disease sizes;
5- Understanding the concept of natural history and disease pre-notice;
6- Recognizing and using the classification of types of studies in researches of medical sciences;
7- Understanding and using the danger measurement method;
8- Understanding the difference of relation and cause and Hill principles;
9- Recognizing the diagnostic tests validity measures;
10- Calculating the tests validity and reliability indices and relation between them and principles of disease screening;

Description: introduction to the initial and infrastructural principles of epidemiology to work as a physician by recognizing the epidemiologic appearance of diseases, indices and related rates in keeping and promoting the individual and population health;

Necessary Content :

1- Introduction, history and application of epidemiology;
2- Diseases transfer method, epidemiology and its control;
3- Occurrence of diseases: occurrence care and sizes;
4- Disease occurrence: measures of death and other health sizes;
5- Natural history of disease and pre-notice;
6- Principles of ecological and sectional studies;
7- Principles of case- evident and cohort studies;
8- Danger estimation;
9- Principles of interventional studies;
10- Evaluating the diagnostic tests;
11- Principles and application of screening;
12- Statistical and cause relation;

Biostatistics

Code: 135
Presentation: Basic Sciences of Medicine
Prerequisite: Principles of Epidemiology
Type of Course: Theoretical (17 hours), Practical (- hours), Total (17 hours)

Total Goals: understanding the fundamentals of statistics, recognizing the common terminology and concepts, understanding the considerations related to the statistical inferences, not performing the calculation details and dominance on statistical techniques except the items required for meeting the said goal;

Description: introduction to the initial and infrastructural principles of biostatistics to work as a physician by performing types of study and judgment in studies performed in finding the approaches for keeping and promoting the individual and population health;

Necessary Content:

- Explaining data, central and dispersion indices;
- Probability, its types and application in medicine;
- Normal distribution and its application in medical sciences;
- Binominal and Poisson distributions;
- Point and distance estimation (reliability limit);
- Hypothesis test and application of statistical software in it;
- Independent T and couple T tests and application of statistical software in it;
- Chai 2 and correlation test and application of statistical software in it;

Research Methodology and Evidence-Based Medicine

Code: 136
Presentation: Clinical Preliminaries/ Clerkship
Prerequisite: Principles of Epidemiology, Biostatistics
Type of Course: Theoretical (7 hours), Practical (19 hours), Total (26 hours)

Total Goals: explaining the framework of a research proposal, preparing a research proposal with all steps, searching the health electronic references, describing the framework and total writing method of a scientific paper; describing the importance and position of evidence- based medicine, changing the clinical questions and other health questions to a searchable and formulated question, searching the evidence based on the formulated question, analyzing and criticizing some medical papers in statistics and research method, knowing the principles of ethics in research and using them in research;

Description: learning the research performance method, searching the papers and evidence- based medical methods including the evidence criticism;

Necessary Content:

1- Selecting the sample and expressing the research problem;
2- Electronic search of medical references I;
3- Goals, questions, hypothesis and types of variables;
4- Population, sample and sampling methods;
5- Quality analysis methods;
6- Selecting the type of study;
7- Data presentation and collection method;
8- Ethics in research;
9- Research management;
10- Scientific method of essay writing and results distribution (optional);
11- Evidence- based medical principles;
12- Forming a searchable question;
13- Electronic search of medical references II;
14- Applied principles of criticism of papers and their application in medicine;

Common Contagious Diseases Epidemiology in Country

Code: 137
Presentation: Clinical Preliminaries/ Clerkship
Prerequisite: Principles of Epidemiology
Type of Course: Theoretical (17 hours), Practical (- hours), Total (17 hours)

Total Goals: expecting at this course to explain the epidemiology of contagious diseases in Iran in terms of geographical and locational distribution, personal

specifications, danger factors, prevention and control methods, and using them in clinical section for determining the best method of prevention and estimation of pre-notice;

Description: introduction to the epidemiology of common contagious diseases in the country in order to act as a physician in protecting and promoting the individual and population health;

Necessary Content:

1- An introduction to the epidemiology of contagious diseases, principles of diseases care and care system;
2- Diseases transferred by sexual tract;
3- Immunity system acquisitive deficiency syndrome (AIDS);
4- Hepatitis;
5- Diseases preventable by vaccine;
6- Flu and newly and re-appeared diseases;
7- Gastrointestinal infections (salmonella, Shigella, giardiasis, amibiasis, toxoplasmosis and cholera;
8- Tuberculosis, leprosy;
9- Epidemiology of zoonosis;
10- Reserve diseases (malaria and lischmania);
11- Hospital infections and microbial resistance;
12-

Remarks: it is advised to present this course concurrent or near to the time of clerkship of infectious diseases.

Common Non-Contagious Diseases Epidemiology in Country

Code: 138
Presentation: Clinical Preliminaries/ Clerkship
Prerequisite: Principles of Epidemiology
Type of Course: Theoretical (17 hours), Practical (- hours), Total (17 hours)

Total Goals: expecting at this course to explain the epidemiology of non-contagious diseases in Iran in terms of geographical and locational distribution, personal specifications, danger factors, prevention and control methods, and using them in clinical section for determining the best method of prevention and estimation of pre-notice;

Description: introduction to the epidemiology of common non-contagious diseases in the country in order to act as a physician in protecting and promoting the individual and population health;

Necessary Content:

1- An introduction to the epidemiology of non-contagious diseases, principles of care of diseases and care system;
2- Epidemiology of arthrosclerosis and blood hypertension;
3- Epidemiology of diabetics, obesity and hyperlipidemia;
4- Epidemiology of accidents and events;
5- Epidemiology of malign diseases (breast, lung, gastric, prostate, esophagus, colon and skin cancer);
6- Epidemiology of psychological diseases (depression, anxiety, murder, home anxiety, etc.) and addiction;
7- Epidemiology of iron deficiency anemia, and thyroid diseases;

Principles of Demography and Family Health

Code: 139
Presentation: Clerkship
Prerequisite: Principles of Health Services
Type of Course: Theoretical (34 hours), Practical (- hours), Total (34 hours)

Total Goals: expecting at this course to describe the demographic developments and indices of Iran and world, and concepts of sustainable development and demographic policies, principles of family health and fertility, and also care programs of this field, nationwide program of healthy child, and health programs of schools, juveniles and young people, mid-age and old-age people, understand the importance of mental health and explain its programs;

Description: introduction to the initial principles of demography and family health in order to act as a physician in protecting and promoting the individual, family and population health;

Necessary Content:

1- Population, sustainable development and demographic policies;
2- Generalities and principles of family health;
3- Generalities of the fertility health and demographic indices;
4- Pre-pregnancy health and consultations;
5- During pregnancy and childbirth and after childbirth cares;
6- Distance of births and its methods;
7- Healthy and vulnerable infant;
8- Promoting the mother milk feeding;
9- Physical growth of child before birth to the end of maturity (evaluation indices and methods);
10- The whole evolution of early childhood and screening the evolutional disorders;
11- National healthy child program I, health care and immunization;

12- National healthy child program I, health promotion;
13- Students and schools health;
14- Juveniles and young people health;
15- Mid-age people (men and women) health;
16- Old people health;
17- Mental health;
18- Violation and social damages (it may involve any age group);

Remarks: social factors determining health and goals of sustainable development from annual report of WHO.
It is advised to present this course concurrent to the medical clerkship as theoretical part of community/ family medicine.

Health Psychology

Code: 140
Presentation: Basic Sciences/ Clinical Preliminaries
Prerequisite: -
Type of Course: Theoretical (34 hours), Practical (- hours), Total (34 hours)

Total Goals:

1- Knowing the different fields of psychology;
2- Introduction to specifications of general psychology of humans including intelligence, personality, memory, recognition of emotions and learning, and defining their relation with promotion of physical and mental health;
3- Achieving a general understanding of role of psychology in promotion of health for improving the life quality and prevention of physical and mental disorders;

Description: using the concepts of this course, reaching an extensive image of interrelation of body and soul, and regarding the role of psychological factors in prevention of appearance and facilitation of treatment in the clinical activity;

Necessary Content :

1- Psychology, medicine and health;
2- Brain, recognition, emotion and behavior;
3- Mental growth;
4- Health and behavior;
5- Motivation, emotion and health;
6- Memory, memory and health;
7- Stress, immunology and health;
8- Mental disorders;
9- Rehabilitation and psychological interventions;
10- Personality and health;

11-Addiction: pathology and side effects;
12-Murder: etiology and side effects;
13-Intelligence;
14-Psychometrics;

Remarks: by focusing on the health dimensions including the physical, psychological, social and spiritual health and self/ psychology of self;

Introduction to the application of psychometric tests in medicine including the tests of:

- General Health Questionnaire (GHQ);
- Minnesota- Multiphasic- Personality- Inventory (MMPI);
- Mindful Cognitive Movement Therapy (MCMT I);

Courses of Medical Ethics

Medical Ethics I
Medical Ethics II
Medical Ethics III
Medical Ethics IV

Medical Ethics I

Code: 141
Presentation: Basic Sciences
Prerequisite: -
Type of Course: Theoretical (- hours), Practical (17 hours), Total (17 hours)

Total Goals:
Cognitive Goals:
- Introduction to the collection of expected capabilities of graduates of general medicine;
- Introduction to the concepts of ethics and principles of professional behavior in medicine;
- Introduction to the basic principles of learning medicine and effective planning for practice;
- Introduction to the basic knowledge of interpersonal communicative skills for connecting the effective relation with professors, personnel, family and friends;

Viewpoint Goals:
- Undertaking and obliging to acquire expected capabilities during the studies;
- Considering the special professional position and existence of moral sensitivities in medicine;
- Performing regularly and immediately all educational affairs including the assignments and duties assigned;
- Using the study skills and time management (including the time management, learning and study style management) in arranging the educational activities;

Skill Goals:
- Observing the principles of professional behavior in their function, and having the behavior and appearance appropriate to the dignity of student of medicine;
- Connecting a good relationship with professors, educational and administrative officers;
- Having effective and honest expression in interpersonal relations;
- Connecting good verbal and eye relation;
- Listening actively;
- Presenting effective planning for learning using the principles of time management and study skills;
-

Description: this course is a part of long theme of professional ethics in curriculum of general medicine, organized and presented in the form of a semester.
Organized in the form of 0.5 practical workshop credit (17 hours), this course describes the key ethics and skills a physician shall have in medicine, begins with introducing the capabilities of general medicine and describing its importance during the study, and continues by presenting generalities related to the introductory skills of effective professional, communicative and learning behavior learnt by a student of medicine at the beginning of entering medicine. At the end of the course, the students are expected to get familiar with these principles and acquire the sufficient knowledge and skill for using them.
This course may be presented in the form of several workshops during the academic semester. To ensure the efficiency of course, the university is required to consider good process and means for evaluation of using the workshop teachings by students.

Necessary Content:
- Introduction to the capabilities expected from general practitioner;
- Principles of professional behavior in medicine I: explaining the importance of role of student as physician during studying and reviewing the principles of professional behavior in medicine;
- Interpersonal communicative skills I: communicative elements and communication obstacles, principles of connecting effective relationship (active listening and self- appearance techniques), using the body language (application of non-verbal techniques in communications);

- Basic principles of learning medicine: studying skills and time management skills;

Remarks: this course is a part of long theme of professional ethics in curriculum of general medicine. Therefore, the result of evaluation is reported in qualitative form (with four grades of more than expectation, in an acceptable form, acceptable by mentioning the further effort in the next courses of medical ethics, and non-acceptable). The first three levels mean passing, and the last failing, which requires taking the course again.
This course is not included in general exam.
The syllabuses presented in this course are on recommendation basis, and curricular planning committee of the university can change them up to 40% if required.

Medical Ethics II

Code: 142
Presentation: Basic Sciences
Prerequisite: -
Type of Course: Theoretical (- hours), Practical (17 hours), Total (17 hours)

Total Goals:
Cognitive Goals:

- Introduction to the general principles of team work, conflicts solution and sympathy techniques;
- Explaining the performance of rethinking and its function in experience analysis;
- Introduction to the general principles of scientific thinking, and distinguishing the thinking standards from each other;

Viewpoint Goals:

- Showing enthusiasm to performance of activities and team work;
- Showing critical and reasonable behavior in confronting the critics of group members;
- Paying attention to the confrontation of issues, thinking and rethinking the experiences taken and effort for promotion of function;
- Obliging the self- learning and updating the knowledge and skills;
- Observing the principles of effective targeting and planning (including the time management, learning and study process management) in arranging the educational activities;
-

Skill Goals:

- Performing team work and having effective cooperation with other students as a member of team;
- Using rethinking methods in experiences of personal and professional life;
- Finding solution for interpersonal conflicts;
- Criticizing the subjects presented and related thinking elements based on the thinking standards;
- Recognizing their educational needs and offering good program for improving the learning by evaluating and analyzing their function;

Description: organized in the form of 0.5 practical workshop credit (17 hours) including "team work workshop" and "experiences analysis and rethinking workshop", this course describes the key ethics and skills a physician shall enjoy in medicine, begins with introducing the general principles of team work and conflicts settlement techniques and method of using the sympathy skill with others compared to the sympathy, and continues by presenting the generalities related to the introductory skills of personal growth including the performance of an effective rethinking and recognition and control of stress. According to the necessity of promotion of practical thinking of students in studying and learning medicine, the thinking elements and standards are introduced, and types of thinking and reasoning types are generally reviewed. At the end of the course, students are expected to get familiar with such principles, and obtain the sufficient knowledge and skills for using them;

Necessary Content:

- Interpersonal communication skills II: team work principles, conflicts solution techniques;

- Basic principles of personal growth I: self- learning management by planning, rethinking and thinking experiences skill;
- Basic skills of scientific thinking I: thinking elements, types of thinking parameters;
- Thinking standards;

Remarks: this course is a part of long theme of professional ethics in curriculum of general medicine. Therefore, the result of evaluation is reported in qualitative form (with four grades of more than expectation, in an acceptable form, acceptable by mentioning the further effort in the next courses of medical ethics, and non-acceptable). The first three levels mean passing, and the last failing, which requires taking the course again.
This course is not included in general exam.
The syllabuses presented in this course are on recommendation basis, and curricular planning committee of the university can change them up to 40% if required.

Medical Ethics III

Code: 143
Presentation: Basic Sciences
Prerequisite: -
Type of Course: Theoretical (- hours), Practical (17 hours), Total (17 hours)

Total Goals:
Cognitive Goals:
- Introduction to the regulations and conditions governing the clinical environment;
- Introduction to the function of treatment team members and their role in inter-occupation cooperation;
- Introduction to the professional position of a physician in the society and health system, and describing the structure, hierarchy and duties of each element of state health and treatment network;
- Explaining the reasoning errors and cognitive errors;
- Distinguishing the general principles of sympathy and compassion;
- Introduction to the professional ethics charter in clinical section;

Viewpoint Goals:
- Observing the medical honesty and dignity in virtual environment;
- Paying attention to recognition and control of mind cognitive mistakes and errors;
- Considering the connection of communication and sympathy to the friends and family, patients and their family;

Skill Goals:
- Observing the principles of professional behavior in good function and confronting the virtual environment;

- Having behavior and appearance appropriate with medical dignity in university and clinical environments (early confrontation);
- Enjoying capability of using the sympathy skill;
- Having reasonable inference and discourse by regarding the inferential errors and cognitive errors;

Description: organized in the form of 0.5 practical workshop credit (17 hours) including "cognitive and medical errors workshop" and "early clinical confrontation workshop", this course describes the key ethics and skills a physician shall enjoy in medicine, and also provides the opportunity of getting familiar with clinical environment in the form of early confrontation program, and introduces the role and function of members of medical team in inter-occupation cooperation. The structure of health system and role of physician therein are explained and introduced in this course. According to the requirement of distinguishing the relation of sympathy and compassion, this course is expected to provide the opportunity of familiarity and practice of sympathy skill. Finally, the most common cognitive and inferential errors are generally reviewed for the purpose promoting the correct inferential skills. At the end of the course, students are expected to get familiar with such principles, and obtain the sufficient knowledge and skills for using them;

Necessary Content :
- Introduction to the clinical environment (early clinical confrontation I);
- Introduction to the role of members of medical team and principles of inter-occupation cooperation;
- Introduction to the role of medicine in the society and health system;
- Basic skills of scientific thinking II: recognizing and controlling the cognitive and inferential errors;
- Interpersonal communication skills III: sympathy;
- Principles of professional behavior in medicine II: principles of professional ethics in virtual environment;

Remarks: this course is a part of long theme of professional ethics in curriculum of general medicine. Therefore, the result of evaluation is reported in qualitative form (with four grades of more than expectation, in an acceptable form, acceptable by mentioning the further effort in the next courses of medical ethics, and non-acceptable). The first three levels mean passing, and the last failing, which requires taking the course again.
This course is not included in general exam.
The syllabuses presented in this course are on recommendation basis, and curricular planning committee of the university can change them up to 40% if required.

Medical Ethics IV

Code: 144
Presentation: Basic Sciences
Prerequisite: -
Type of Course: Theoretical (- hours), Practical (17 hours), Total (17 hours)

Total Goals:
Cognitive Goals:
- Introduction to the responsibilities and the roles of students of medicine in medical team;
- Recognizing the signs and situations causing anger;
- Mentioning the anxiety signs and anti- stress techniques;
- Introduction to the concepts, principles and generalities, methods and application of consultation in medicine and educating the patient;
- Explaining the correct principles of give effective lecture;
- Introduction to the correct principles of designing the scientific audiovisual means including Power Point;
- Explaining the correct principles of giving feedback;

Viewpoint Goals:
- Observing the behaviors showing the honesty and medical dignity;
- Observing the principles of professional behavior in clinical environments;
- Feeling commitment on moral ethics against patients, their family and in their professional communications;
- Showing enthusiasm for giving and receiving effective feedback for promoting their function and others;

Skill Goals:
- Considering the anger control methods and its adaptive means in related situations;
- Recognizing the stress-making situations and controlling them using the principles of stress management skill suitably;
- Giving speech in student environments according to the principles of rhetoric appropriately;
- Preparing necessary audiovisual content for a lecture using the scientific design principles;
- Using effective feedback principles in related situations;

Description: organized in the form of 0.5 practical workshop credit (17 hours) including "anti-stress and anger control methods workshop" and "principles of lecturing and rhetoric workshop", this course describes the key ethics and skills a physician shall enjoy in medicine, and also provides the opportunity of getting familiar with the roles expected from clinical students in medical team, discusses the function of moral principles in clinical environments. The anger and stress control skills in foregoing situations are explained and introduced in this course. According to

the requirement of acquiring the effective lecturing skill, this course presents some topics on the principles of rhetoric and principal design method of scientific Power Point and also giving efficient feedback. Finally, the most common cognitive and inferential errors are generally reviewed for the purpose promoting the correct inferential skills. At the end of the course, students are expected to get familiar with such principles, and obtain the sufficient knowledge and skills for using them;

Necessary Content:

- Introduction to the clinical environment (early clinical confrontation II);
- Basic principles of personal growth II: anger and wrath, stress management;
- Introduction to giving effective feedback;
- Consultation: introduction to the concepts, principles, rules and goals of consultation and patient education;
- Consultation process;
- Necessary capabilities and skills in consultation, professional role of physician in consultation and patient education;
- Introduction to the principles of scientific presentation (effective lecturing): correct principles of preparing Power Point, rhetoric skills and giving effective lecturing;
- Professional behavior principles in medicine III: observing the professional ethics in clinical environment (reviewing the professional ethics charter): observation, case discussion, limited research;

Remarks: this course is a part of long theme of professional ethics in curriculum of general medicine. Therefore, the result of evaluation is reported in qualitative form (with four grades of more than expectation, in an acceptable form, acceptable by mentioning the further effort in the next courses of medical ethics, and non-acceptable). The first three levels mean passing, and the last failing, which requires taking the course again.

This course is not included in general exam.

The syllabuses presented in this course are on recommendation basis, and curricular planning committee of the university can change them up to 40% if required.

Courses of Specialized English Languages

Specialized English Language in Medicine I
Specialized English Language in Medicine II

Specialized English Language in Medicine I

Code: 145
Presentation: Basic Sciences
Prerequisite: General English Language
Type of Course: Theoretical (51 hours), Practical (- hours), Total (51 hours)

Total Goals: reading and understanding the medical English texts, realizing and using the academic and medical expressions and words, talking fluently about the medical subjects, and understanding fast the speech of others on the medical topics, and also the importance of English language in educational activities in definite time with cooperation of department (as a viewpoint goal);

Description: according to the increasing need of students and graduates of medicine to study of medical books and papers in order to increase and update their medical knowledge and perform the research on different subjects related to this field, this course tries to increase the students' capabilities and skills in reading and understanding the medical texts. For this purpose, the much time of class (2/3rd) is allocated to education of specialized texts reading and comprehension techniques. This course considers the need of students to speaking English language in physical (personal) and virtual environments. Accordingly, a part of class time is allocated to the practice of educating the specialized audio-lingual techniques; so, this class shall be held in English language. Each student shall give lecture in English language in class for at least 5 minutes.

Necessary Content:
- Physiology of human body;
- Anatomy of human body;
- Molecular change;
- Traditional medicine;
- Hepatitis;
- Surgery;
- Ebula;
- Cardiovascular system I;
- Cardiovascular system II;
- HIV AIDS;
- Cancer;
- Diagnosis;
- Epidemiology I;

- Epidemiology II;
- Public healthy I;
- Public health II;
- Pain I;
- Pain II;
- Medical terminology;
- Medical terminology;

Remarks: this class shall be held in English language.
During academic semester, different texts of medical subjects engaged by students in basic and clinical sciences with are presented in the form of reading and conversation skills.

Specialized English Language in Medicine II

Code: 146
Presentation: Basic Sciences
Prerequisite: Specialized English Language in Medicine I
Type of Course: Theoretical (51 hours), Practical (- hours), Total (51 hours)
Total Goals: reading and understanding easily the medical English texts with more difficulty, realizing and using the academic and medical expressions and words along with Specialized English Language in Medicine I, talking fluently about the medical subjects, and understanding fast the medical speech, and also using the lingual skills in group activities (medical subjects);

Description: (for continuing and completing the goals of Specialized English Language in Medicine I) amplifying the students' capabilities in reading, speaking and listening so that they can easily search their required concepts in specialized English references and offer their findings in English language;

Necessary Content :
- Emergency medicine;
- Sport medicine;
- Space medicine;
- Immunology;
- Nervous system;
- Digestive system;
- Pulmonary system;
- Psychiatry;
- Nutrition;
- Translation;
- Medical ethics;
- E-medicine;
- Infectious diseases;

- Hospital acquired infection (nosocomial);

Remarks: different specialized medical texts with more diversity and difficulty are used in this course.

Courses of Pathology

General Pathology:
Generalities of Pathology and Cellular Damage
Inflammation, Tissue Recovery and Hemodynamic Pathology Disorders
Human Body Immunity System Disorders Pathology
Neoplasia Pathology
Childhood Diseases and Genetic Disorders Pathology
Peripheral, Nutrition and Infectious Diseases Pathology
Practical Pathology
Clinical Pathology
Specialized Pathology
Cardiovascular System
Pulmonary System
Kidney and Upper Urinary Tract
Gastrointestinal System
Liver and Biliary Tract
Congenital System, Lower Urinary Tract and Breast
Hematology and Endocrinology
Skin, Bones, Soft Tissues and Joints
Central and Peripheral Nervous System

Generalities of Pathology and Cellular Damage

Code: 147
Presentation: Basic Sciences/ Clinical Preliminaries
Prerequisite: Introduction to Anatomy
Type of Course: Theoretical (9 hours), Practical (- hours), Total (9 hours)

Total Goals: introduction to generalities of pathology, pathologic manifestations of cellular damage, cell death, and understanding the clinical phenomena of hemodynamic disorders, immunity disorders in human body, tumors, genetic disorders, environmental diseases, malnutrition and infectious diseases by using them;

Description: training the cellular damage process, cell death, inflammation and tissue recovery;

Necessary Content:
Generalities of Pathology (1 hour):
- Definition of pathology;
- History of pathology;

- Definition of disease;
- Items related to a disease (definition, etiology, clinical symptoms, etc);
- Pathogenic mechanisms in human body;
- Human body defensive mechanisms in different diseases;
- Diseases diagnosis methods;
- Role of laboratory in diagnosis, treatment and prevention of diseases;

Cell Damage, Cell Death and Adjustment (8 hours):

- Cellular and tissue response to the damaging factors;
- Cellular and tissue adjustment (hypotrophy, hyperplasia, atrophy, and metaplasia);
- Cell damage and cell and tissue death, reasons, factors, tissue changes and some examples (types of necrosis and apoptosis);
- Intracellular and tissue aggregations (calcium sedimentation, fat aggregation, protein, glycogen, and types of resins and amyloidosis);
- Aging process;
- Important clinical items in relation to the cell damage, reasons, factors and some example;

Inflammation, Tissue Regeneration and Hemodynamic Disorders Pathology

Code: 148
Presentation: Basic Sciences/ Clinical Preliminaries
Prerequisite: Generalities of Pathology and Cell Injury
Type of Course: Theoretical (10 hours), Practical (- hours), Total (10 hours)

Total Goals: introduction to the changes of inflammation and tissue regeneration well in order to understand the clinical phenomena of hemodynamic disorders, immunity disorders in human body, tumors, genetic disorders, environmental diseases, malnutrition and infectious diseases;

Description: training the inflammation changes and tissue regeneration processes, and training the cellular death and injury process, inflammation and tissue regeneration;

Necessary Content:
Inflammation and Tissue Regeneration (6 hour):

- General important items on inflammation and inflammation phenomena in human body;
- Types of inflammation and its classification;
- Tissue changes during types of inflammation;
- Inflammation mechanism;
- Effects and results of types of inflammation in human body;
- Tissue regeneration, their mechanism, results and importance;

- Important clinical items related to inflammation and tissue regeneration and some examples;

Hemodynamic Disorders (4 hours):

- General and important items on blood circulation and fluids in body;
- Hyperemia;
- Edema;
- Bleeding;
- Hemostasis;
- Thrombus;
- Emboli;
- Infarct;
- Sahock;
- Important clinical items in relation to each hemodynamic disorders and expressing some examples;

Remarks: education of pathologic subjects may be organized and integrated into the educational program of university in the form of independent educational packages by observing the approved educational titles, contents and hours.

Human Body Immunity System Disorders Pathology

Code: 149
Presentation: Basic Sciences/ Clinical Preliminaries
Prerequisite: Inflammation, Tissue Regeneration and Hemodynamic Disorders Pathology
Type of Course: Theoretical (8 hours), Practical (- hours), Total (8 hours)

Total Goals: introduction to the immunity disorders in human body well in order to understand the related clinical phenomena;

Description: training the immunity disorders in human body based on the cell death process, cell death, inflammation and tissue regeneration and also the pathologic manifestations of hemodynamic disorders;

Necessary Content :

Immunity Disorders in Human Body:

- Introduction to immunity system and its function, supervising and taking care of the human body;
- Injuries arisen from the immunity system malfunction;
- Hypersensitivity of immunity system, reasons, types and injuries;
- Autoimmunity, reasons, types and injuries;
- Immune deficiency, reasons, types and injuries;
- Tissue connection, definition, types and disconnection mechanism;
- Amyloidosis;

- Important clinical items and examples in terms of each disorder of human body immunity system;

Remarks: education of pathologic subjects may be organized and integrated into the educational program of university in the form of independent educational packages by observing the approved educational titles, contents and hours.

Neoplasia Pathology

Code: 150
Presentation: Basic Sciences/ Clinical Preliminaries
Prerequisite: Inflammation, Tissue Regeneration and Hemodynamic Disorders Pathology
Type of Course: Theoretical (10 hours), Practical (- hours), Total (10 hours)

Total Goals: introduction to the tumors and neoplastic changes;

Description: training the tumors and neoplastic changes, based on the cell death process, cell death, inflammation and tissue regeneration and also the pathologic manifestations of hemodynamic disorders, and immunity disorders in human body;

Necessary Content:
- Tumors nomenclature;
- Specifications of malign and benign neoplasm;
- Different steps of carcinogenesis and hallmarks;
- Cancers etiology;
- Host's response to the tumor;
- Clinical view to the neoplasm;

Remarks: education of pathologic subjects may be organized and integrated into the educational program of university in the form of independent educational packages by observing the approved educational titles, contents and hours.

Childhood Diseases and Genetic Disorders Pathology

Code: 151
Presentation: Basic Sciences/ Clinical Preliminaries
Prerequisite: Inflammation, Tissue Regeneration and Hemodynamic Disorders Pathology
Type of Course: Theoretical (8 hours), Practical (- hours), Total (8 hours)

Total Goals: introduction to the pathology of genetic disorders and the period diseases;

Description: training the genetic disorders and childhood diseases;

Necessary Content:
- Nature of genetic disorders in human;
- Mendel disorders;
- Multigene diseases;
- Cytogenetic diseases;
- Monogenic diseases by atypical inheritance;
- Childhood diseases including the congenital anomalies;
- Prenatal infections;
- Respiration distress syndrome (RDS);
- Infant sudden death syndrome;
- Embryonic hydrops;
- Tumor and pseudo- tumor lesions in children;
- Molecular diagnosis of genetic diseases;

Remarks: education of pathologic subjects may be organized and integrated into the educational program of university in the form of independent educational packages by observing the approved educational titles, contents and hours.

Peripheral, Nutritional and Infectious Diseases Pathology

Code: 152
Presentation: Basic Sciences/ Clinical Preliminaries
Prerequisite: Inflammation, Tissue Regeneration and Hemodynamic Disorders Pathology
Type of Course: Theoretical (6 hours), Practical (- hours), Total (6 hours)

Total Goals: introduction to the pathology of the environmental, malnutrition and infectious diseases;

Description: training the genetic disorders, the environmental, malnutrition and infectious diseases;

Necessary Content:
Environmental Diseases and Malnutrition Diseases (4 hours):
- Toxic and damaging physical and chemical factors;
- Environmental pollutants;
- Tobacco;
- Alcohol;
- Drugs misuse;
- Injury by physical impacts;
- Nutritional diseases including malnutrition, vitamin deficiency, obesity, overeating, and nervous anorexia;

Infectious Diseases (2 hours):

- General principles of microbial pathogenesis;
- Specialized techniques for diagnosing the infectious factors;
- New and appearing infectious factors;
- Bioterrorism factors;
- Viral and bacterial injury mechanism;
- Microbe escaping from immunity system;
- Scope of inflammatory response to the infectious factors;

Remarks: education of pathologic subjects may be organized and integrated into the educational program of university in the form of independent educational packages by observing the approved educational titles, contents and hours.

Practical Pathology

Code: 153
Presentation: Basic Sciences/ Clinical Preliminaries
Prerequisite: Courses of General Pathology (prerequisite or co-requisite)
Type of Course: Theoretical (- hours), Practical (34 hours), Total (34 hours)

Total Goals:

1- Introduction to pathology laboratory, performance method, reception and preparation of samples, answering and archiving;
2- Recognizing types of samples tested and sampling and sample evaluation methods in pathology laboratory;
3- Recognizing the correct method of sending types of clinical samples to pathology laboratory;
4- Connecting the relation of clinical physician with laboratory;

Description: including the principles, processes and general correct methods of clinical work in relation to the pathology laboratory especially recognizing the main types of clinical samples;

Necessary Content:
Introduction to pathology laboratory, performance method, reception and preparation of samples, answering and archiving;
Sampling and sample evaluation methods in pathology laboratory;
Correct method of sending types of clinical samples to pathology laboratory and the relation of clinical physician with laboratory;

Recognizing all types of samples tested including the slides:

1- Squamous metaplasia;
2- Serious abscess with fluid necrosis;
3- Non-specialized chronic inflammation;
4- Granuloma inflammation with caseous necrosis (tuberculosis);
5- Cloning necrosis;
6- Fat aggregation in liver;
7- Melanin aggregation;
8- Calcium sedimentation;
9- Xenatollasma (aggregation);
10- Stem lesion and tissue;
11- Scar or colloid;
12- Tissue hyperemia;
13- Thrombus;
14- Infarct;
15- Allergic inflammation;
16- Amyloid sedimentation;

17-Adenoma;
18-Papilloma;
19-Osteochondroma;
20-Lipoma;
21-Adenocarcinoma;
22-Oscoamocelcarcinum;
23-Sarcoma;
24-Lymphoma;
25-Teratum (three-layer embryo);
26-Plasmacytome;
27-Polyps;
28-Dysplasia and carcinoma in place;
29-Metastases;
30-Cystic lesions;
31-Hydatid lesions;
32-Pop Smear;
33-A sample of immunohistochemistry;
34-A sample of cytology;
35-A parasitic disease (aspergillus, mucormycosis, cutaneous lishmaniasis);
36-Other group slides;

Clinical Pathology

Code: 154
Presentation: Basic Sciences/ Clinical Preliminaries
Prerequisite: General Pathology, Practical Pathology
Type of Course: Theoretical (16 hours), Practical (2 hours), Total (18 hours)

Total Goals: introduction to the work process in clinical laboratories for better understanding of their role in the future as a general practitioner in different steps of this process: pre-analytic step (sampling and sending to laboratory) analytic (test performance process), and post- analytic (test results interpretation), compliance of requesting the test and clinical doubt and observation of economic status, sending an appropriate sample to the laboratory, interpreting the results of tests with other Para clinical and clinical findings of patient, if necessary requesting for repetition or complementary tests, having better interaction, cooperation and coordination with laboratory for optimal use of laboratory in diagnosis and treatment;

Description: introduction to the work process in clinical laboratories in order to play the role of general practitioner well in the future in different steps of this process: pre-analytic step (sampling and sending to laboratory) analytic (test performance process), and post- analytic (test results interpretation);

Necessary Content:

1- Introduction to different sections of laboratory, sample reception process, working in laboratory, preparing sample and giving answer by mentioning the role of clinical physician in facilitation and promotion of answering;
2- Correct method of requesting types of sample according to the clinical doubt, status of patient and economic efficiency;
3- Correct guide of patient for performing the test accurately and preparing the patient for examination and suitable sampling;
4- Method of appropriate transfer of types of samples to the laboratory and the role of different factors in this step;
5- Principle of common laboratory methods, effective factors on them and limitation of methods in their interpretation and compliance with the clinical signs;
6- Interpreting the laboratory results according to the definitions of test changes, reference intervals, sensitivity, specifications and predicting values of positive and negative results in tests;
7- Requesting the further and complementary tests in case of results different or disharmonic with the clinical findings or different from the previous tests of patient and their interpretation;
8- Blood consumption management, blood compatibility tests including determining the blood groups, antibody screening and performing cross match and laboratory control of side effects of blood transfusion;
9- Requesting and interpreting the biochemical and urinary tests;
10- Requesting and interpreting the infectious and parasitic tests;
11- Requesting and interpreting the hormone, immunology and serology tests;
12- Requesting and interpreting the hematology tests;
13- Introduction to the health evaluation tests (checkup);
14- Introduction to the diseases prevention tests especially tumor markers;
15- Introduction to the screening and point of care tests;
16- Clinical examples and laboratory challenges especially by focusing on the problems of interpreting the tests and further interaction of clinical side and laboratory;

Remarks: this course may be presented in clerkship course in the workshop form.

Specialized Pathology of Cardiovascular System

Code: 155
Presentation: Clinical Preliminaries
Prerequisite: General Pathology
Type of Course: Theoretical (6 hours), Practical (2 hours), Total (8 hours)

Total Goals: introduction to the common diseases and tumors of cardiovascular system in order to guess the disease of a patient by relying on their knowledge;

Description: training the etiology, pathogenesis, morphology, clinical manifestations of common diseases and tumors of cardiovascular system;

Necessary Content :

1- Structure and function of blood vessels;
2- Venous tumors and types of vasculitis;
3- Otosclerosis;
4- Clinical phenomena of Otosclerosis;
5- Aneurisms;
6- Ischemic heart diseases and heart congestion deficiency;
7- Endocarditis, myocarditis, and pericarditis;
8- Heart tumors;

Necessary slides of practical section:

1- Heart microm;
2- One type of common hemangioma;
3- One type of common vasculitis;
4- Arthrosclerosis;

Remarks: education of pathologic subjects may be organized and integrated into the educational program of university in the form of independent educational packages by observing the approved educational titles, contents and hours.

Specialized Pathology of Pulmonary System

Code: 156
Presentation: Clinical Preliminaries
Prerequisite: General Pathology
Type of Course: Theoretical (6 hours), Practical (2 hours), Total (8 hours)

Total Goals: introduction to the common diseases and tumors of pulmonary system in order to guess the disease of a patient by relying on their knowledge;

Description: training the etiology, pathogenesis, morphology, clinical manifestations of common diseases and tumors of pulmonary system;

Necessary Content:

1- Atelectasis;
2- Serious lung injury;
3- Lung obstruction diseases;
4- Chronic interstitial diseases;
5- Vascular diseases;
6- Lung infections;
7- Lung tumors;

8- Pleura lesions;
9- Upper respiratory system lesions;

Necessary slides of practical section:
Lung: lung cell, hydatid cyst, carcinoma with small cell, other carcinoma of lung such as adenocarcinoma or SCC;
Nose: nose polyps, fungal lesion such as aspergillus or mucormycosis;
Remarks: education of pathologic subjects may be organized and integrated into the educational program of university in the form of independent educational packages by observing the approved educational titles, contents and hours.

Specialized Pathology of Kidney and Upper Urinary Tract

Code: 157
Presentation: Clinical Preliminaries
Prerequisite: General Pathology
Type of Course: Theoretical (6 hours), Practical (2 hours), Total (8 hours)

Total Goals: introduction to the common diseases and tumors of kidney and urinary tract in order to guess the disease of a patient by relying on their knowledge;

Description: training the etiology, pathogenesis, morphology, clinical manifestations of common diseases and tumors of cardiovascular system;

Necessary Content :
1- Clinical manifestations of kidney diseases;
2- Glomerular diseases and its mechanism;
3- Nephrotic syndrome;
4- Nephritic syndrome;
5- Nephropathy IgA;
6- Congenital nephritis;
7- Fast progressive glomerulonephritis;
8- Tubular- interstitial diseases;
9- Interstitial tubular nephritis;
10- Kidney vessel diseases (arterianephrosclerosis, malign hypertension);
11- Chronic kidney disease;
12- Kidney cystic diseases;
13- Tumors;

Necessary slides of practical section:
1- Chronic pyelonephritis;
2- One type of glomerulonephritis;
3- Kidney amyloidosis;
4- Kidney carcinoma;
5- Nephroblastomy;

Remarks: education of pathologic subjects may be organized and integrated into the educational program of university in the form of independent educational packages by observing the approved educational titles, contents and hours.

Specialized Pathology of Gastrointestinal System

Code: 158
Presentation: Clinical Preliminaries
Prerequisite: Specialized Pathology of Gastrointestinal System
Type of Course: Theoretical (8 hours), Practical (4 hours), Total (12 hours)

Total Goals: introduction to the common diseases and tumors of gastrointestinal system in order to guess the disease of a patient by relying on their knowledge;

Description: training the etiology, pathogenesis, morphology, clinical manifestations of common diseases and tumors of gastrointestinal system;

Necessary Content:

1- Mouth lesions (leucoplakia, malign and benign tumors, malign and benign lesions of salivary gland);
2- Esophagus (esophageal varices, esophagitis, esophagitis reflux, Barrett's esophagus, esophageal tumors);
3- Stomach (its inflammatory and neoplastic diseases);
4- Small and great intestine (Hirschsprung, diarrheal diseases, colon inflammatory diseases, colon polyps, colon tumors);
5- Appendices;

Necessary slides of practical section:
Salivary glands: adenoma pleomorphic, adenoid cystic carcinoma;
Esophagus: SCC;
Stomach: a type of gastric preferably by helicobacter pollution, ordinary gastric Adenocarcinoma, cell carcinoma, Signet Ring, GIST;
Colon: celiac disease, one type of BD, colon adenoma polyp, colon carcinoma, colon carcinoid, colon lymphoma;
Remarks: education of pathologic subjects may be organized and integrated into the educational program of university in the form of independent educational packages by observing the approved educational titles, contents and hours.

Specialized Pathology of Liver and Biliary Tract

Code: 159
Presentation: Clinical Preliminaries
Prerequisite: General Pathology
Type of Course: Theoretical (6 hours), Practical (2 hours), Total (8 hours)

Total Goals: introduction to the common diseases and tumors of liver and biliary tract in order to guess the disease of a patient by relying on their knowledge;

Description: training the etiology, pathogenesis, morphology, clinical manifestations of common diseases and tumors of liver and biliary tract;

Necessary Content:

1- Liver deficiency;
2- Jaundice and cholestasis;
3- Cirrhosis;
4- Hypertension port;
5- Chronic and serious hepatitis;
6- Viral hepatitis;
7- Alcohol and non-alcohol fat liver;
8- Cholestatic diseases (PBC, PSC);
9- Congenital metabolic diseases;
10- Liver abscess;
11- Liver tumors and nodules;
12- Gallbladder diseases;
13- Gallbladder cancer;
14- Exocrine pancreas lesions (pancreatitis, pancreas neoplasm);

Necessary slides of practical section:

1- One type of hepatitis;
2- Fat aggregation;
3- Cirrhosis;
4- Liver cell carcinoma;
5- Metastasis to liver;

Remarks: education of pathologic subjects may be organized and integrated into the educational program of university in the form of independent educational packages by observing the approved educational titles, contents and hours.

Specialized Pathology of Liver and Biliary Tract

Code: 159
Presentation: Clinical Preliminaries
Prerequisite: General Pathology
Type of Course: Theoretical (6 hours), Practical (2 hours), Total (8 hours)

Total Goals: introduction to the common diseases and tumors of liver and biliary tract in order to guess the disease of a patient by relying on their knowledge;

Description: training the etiology, pathogenesis, morphology, clinical manifestations of common diseases and tumors of liver and biliary tract;

Necessary Content:

15-Liver deficiency;
16-Jaundice and cholestasis;
17-Cirrhosis;
18-Hypertension port;
19-Chronic and serious hepatitis;
20-Viral hepatitis;
21-Alcohol and non-alcohol fat liver;
22-Cholestatic diseases (PBC, PSC);
23-Congenital metabolic diseases;
24-Liver abscess;
25-Liver tumors and nodules;
26-Gallbladder diseases;
27-Gallbladder cancer;
28-Exocrine pancreas lesions (pancreatitis, pancreas neoplasm);

Necessary slides of practical section:

6- One type of hepatitis;
7- Fat aggregation;
8- Cirrhosis;
9- Liver cell carcinoma;
10-Metastasis to liver;

Remarks: education of pathologic subjects may be organized and integrated into the educational program of university in the form of independent educational packages by observing the approved educational titles, contents and hours.

Specialized Pathology of Genital System, Lower Urinary Tract and Breast

Code: 160
Presentation: Clinical Preliminaries
Prerequisite: General Pathology
Type of Course: Theoretical (10 hours), Practical (4 hours), Total (14 hours)

Total Goals: introduction to the common diseases and tumors of genital system, lower urinary tract in men and women genital system and breasts in order to guess the disease of a patient by relying on their knowledge;

Description: training the etiology, pathogenesis, morphology, clinical manifestations of common diseases and tumors of genital system, lower urinary tract in men and women genital system and breasts;

Necessary Content:

1- Men Genital System and Lower Urinary Tract (2 hours):
   - Penis (inflammatory lesions, neoplasms);
   - Scrotum, tentacle, oppidum;
   - Prostate;
   - Ureter, urethra, bladder;
   - Pathology of diseases transferred by sexual discourse;
2- Women Genital System (6 hours):
   - Vulva (inflammatory lesions, non-neoplastic lesions, tumors);
   - Vagina (inflammatory lesions, malign tumors, SCC, adenocarcinoma, sarcoma Bureotide);
   - Cervix (inflammatory lesions of cervix, cervix neoplasia, aggressive cervix cancer, endocervical polyp);
   - Trunk of the womb (endometritis, adenomyosis, AUB, endometer and myometer proliferative lesions, endometrium hyperplasia, carcinoma endometrium, endometrium polyps, lyomium, Lyomiosarcoma;
   - Ovaries (follicle cysts and ovaries, polycyst ovary, ovary tumors, surface Epithelial tumors, serous tumors, mosinoss tumors, endometritis tumors);
   - Pregnancy diseases (placenta inflammations and infections, ectopic pregnancy, trophoblastic disease);
   - Preeclampsia, eclampsia;
3- Breast Diseases (2 hours):
   - Fibrocystic changes;
   - Inflammatory processes;
   - Tumors;
   - Breast lesions in men;

Necessary slides of practical section:
Bladder: TCC;
Testicle: testicle atrophy, seminoma, non-seminoma tumor;
Prostate: prostate hyperplasia and adenocarcinoma;
Uterine and placenta: endometrium hyperplasia, uterine fibroid, uterine adenocarcium, mole hydratiform;
Cervix: squamous metaplasia inflammation, cervix dysplasia, cervix polyp, SCC, Pop Smear;
Ovary: serous and mosinoss cyst, one type of ovary carcinoma, ovary teratum;
Thyroid: nodular goiter, Hashimoto disease, thyroid adenoma, papillary carcinoma, modular carcinoma;
Breast: fibrocystic disease, fibroadenoma, typical kind of ductal carcinoma, typical kind of lobular carcinoma;
Remarks: education of pathologic subjects may be organized and integrated into the educational program of university in the form of independent educational packages by observing the approved educational titles, contents and hours.

Specialized Pathology of Hematology and Endocrinology

Code: 161
Presentation: Clinical Preliminaries
Prerequisite: General Pathology
Type of Course: Theoretical (10 hours), Practical (2 hours), Total (12 hours)
Total Goals: introduction to the common diseases and tumors of endocrine system and breasts in order to guess the disease of a patient by relying on their knowledge;
Description: training the etiology, pathogenesis, morphology, clinical manifestations of common diseases and tumors of endocrine system and breasts;

Necessary Content:

1- Endocrine Gland (4 hours):
   - Hypophysis;
   - Thyroid;
   - Parathyroid gland;
   - Endocrine pancreas;
   - Adrenal cortex;
   - Adrenal modula;
2- Hematology (6 hours):
   - RBC lesions (types of anemia);
   - WBC lesions (neoplastic lesions);
   - Spleen and thymus lesions (splenomegaly, malign and benign lesions);

Necessary slides of practical section:
Adrenal: Pheochromocytoma, Neuroblastoma;

Lymphatic node: cell, one type of Hodgkin's lymphoma, one type of non- Hodgkin's lymphoma;
Marrow: one type of serious leukemia, one type of chronic leukemia, various myeloma;
Remarks: education of pathologic subjects may be organized and integrated into the educational program of university in the form of independent educational packages by observing the approved educational titles, contents and hours.

Specialized Pathology of Skin, Bones, Soft Tissues and Joints

Code: 162
Presentation: Clinical Preliminaries
Prerequisite: General Pathology
Type of Course: Theoretical (8 hours), Practical (4 hours), Total (12 hours)

Total Goals: introduction to the common diseases and tumors of skin, bones, soft tissues and joints in order to guess the disease of a patient by relying on their knowledge;
Description: training the etiology, pathogenesis, morphology, clinical manifestations of common diseases and tumors of skin, bones, soft tissues and joints;

Necessary Content :

1- Dermatology Pathology: serious and chronic inflammatory dermatoses, Visculobulose, Pemphigus, Pemphigoid, Herpetiform Dermatitis, malign and benign skin lesions;
2- Bone Diseases:
   - Congenital bone and joint disorders;
   - Acquisitive bone diseases;
   - Osteomyelitis;
   - Bone tumors;
3- Joint Diseases:
   - Arteritis;
   - Joint tumors and pseudo- tumor lesions;
4- Soft Tissues Diseases:
   - Soft tissue tumors and its types;

Necessary slides of practical section:
Skin: one common inflammatory diseases such as Lichen planus or psoriasis, a blister such as Pemphigus, verruca, Seborrheic Keratosis, Neuss Melanocity, Melanoma, BCC and SCC;
Bone: Chondroma and Chondrosarcoma, osteochondroma, osteosarcoma, Ewing's sarcoma;
Soft Tissue: one type of benign tumors such as lipoma or fibroma, Schwannoma, fibromatosis, one typical kind of sarcomas;

Remarks: education of pathologic subjects may be organized and integrated into the educational program of university in the form of independent educational packages by observing the approved educational titles, contents and hours.

Specialized Pathology of Central and Peripheral Nervous System

Code: 163
Presentation: Clinical Preliminaries
Prerequisite: General Pathology
Type of Course: Theoretical (8 hours), Practical (2 hours), Total (10 hours)

Total Goals: introduction to the common diseases and tumors of central and peripheral nervous system in order to guess the disease of a patient by relying on their knowledge;

Description: training the etiology, pathogenesis, morphology, clinical manifestations of common diseases and tumors of central and peripheral nervous system;

Necessary Content:

1- Nervous system injury plan;
2- Cerebral vascular disease;
3- Infections of nervous system;
4- Initiative myelin;
5- Neurodegenerative diseases;
6- Tumors;
7- Familiar tumor syndromes;
8- Peripheral nerve disorders;
9- Nerve and muscle function injury;
10- Malign and benign tumors of peripheral nerves;
11- Musculoskeletal diseases;

Necessary slides of practical section:
Astrocytoma, meningioma, Ependymoma;
Remarks: education of pathologic subjects may be organized and integrated into the educational program of university in the form of independent educational packages by observing the approved educational titles, contents and hours.

Courses of Medical Pharmacology

Basic Principles of Medical Pharmacology
Cardiovascular and Pulmonary Pharmacology
Antimicrobial Drugs Pharmacology
Gastrointestinal, Hematology and Rheumatology Pharmacology
Endocrine Drugs Pharmacology
Neurology System Pharmacology

Basic Principles of Medical Pharmacology

Code: 164
Presentation: Basic Sciences, Clinical Preliminaries
Prerequisite: Biochemistry, Physiology, Nervous System Anatomy
Type of Course: Theoretical (17 hours), Practical (- hours)

Total Goals: understanding basic concept of pharmacology, communication of such concepts with pharmacological effects of drugs and using the special drugs in systems pharmacology;

Description: introduction to the preliminaries and basic concepts of pharmacology including kinetics and dynamics of drugs, and also the drugs of autonomic system as an introduction to the systems pharmacology;

Necessary Content:

- Introduction to Pharmacology: definition of pharmacology, databases in pharmacology and pharmaceutical information, nature and specifications of drugs (molecular weight and size, connections of drug), pharmacodynamics principles (receptors and other places of pharmaceutical connection), pharmacokinetic principles (introduction to absorption, distribution, metabolism, desorption), new drugs production and confirmation process (safe and efficiency, animal tests, clinical trials, pharmaceutical monopoly, new drugs, drugs laws and regulations, Orphan drugs);
- Pharmacokinetics: effective drug concentration, distribution volume, clearance, half-life, bioactivity, removing drugs, reasonable diet of drugs subscribed doses, medical scope, regulating dosage in excretion of stool cases, drugs metabolism (types, indices of determining the metabolism speed, correct consumption method and comparison of solid dosage forms and edible liquid, injection products, aspiration products, local products (cutaneous, eye, nose and ear, rectal, vaginal, etc) and other methods;
- Pharmacodynamics: definition of drug receptor and effector, nature of receptors, other places of drugs function, drugs intervention by receptors, drugs classifications based on their effects on the receptor, definition and comparison of drugs in terms of affinity, intrinsic activity, measures of

quantitative comparison of drugs (efficacy, potency and ED50), graded dose-response curves, definition and comparison of agonist drugs, antagonist partial agonist, inverse agonists, competitive and non-competitive antagonist, pharmacologic, chemical and physiological antagonists, quantal dose- response curves, drugs immunity comparison criteria (certain safety factor, therapeutic index, TD50, LD50), receptors setting, interpersonal changes and types of such change in responding the drugs, treatment, reception (adherence, compliance and concordance), tolerance and Taci Fiacles, medical effects and side effects of drugs (side effects, toxicity, Idiosyncrasy, tolerance, aggregation, allergic, etc), pharmacovigilance, pharmacogenetics;

All definitions, concepts, comparisons, etc. will be presented by mentioning the pharmaceutical examples:

- Introduction to Autonomy Nervous System: comparing the autonomy system with sensory and motion nerves, classification of autonomy nerves (nervous nodes, pre-node and post-node fibers, etc.), message transfer method in cholinergic and adrenergic nerves (saving, releasing and ending the effect), introduction to the general mechanisms of function of effective drugs on production steps, saving, releasing and ending the effect of sympathetic and parasympathetic systems, types of cholinergic and adrenergic receivers, their distribution and function in different tissues, effects of motivation of parasympathetic and sympathetic systems on body organs and their interactions, positions and regulating the autonomy nerves, auxiliary or accompanied transmitters (co-transmitter), details of function of autonomy nerves of heart and vessels in regulating the medium vessel pressure, in eye and colon (as important examples);
- Esters Anticholine and Cholinergic Receptors Motivation Drugs: classification of cholinergic drugs (cholinomimetic), main clinical applications of direct activating parasympathomimetic drugs (such as bethankool, pilocarpine, and cevimeline), indirect operating cholinergic drugs including the classification, clinical applications, toxic and side effects, precautions, differences of such drugs (such as Adfronium, Physostagmin, tacrine, rivastigmine, etc.), available pharmaceuticals in this group of drugs;
- Cholinergic Nicotine and Muscarinic Receptors Preventive Drugs: classification, clinical applications, toxic and side effects, precautions, differences of such drugs, available pharmaceuticals in this group of drugs;
- Sympathomimetic Drugs: classification, clinical applications, toxic and side effects, precautions, differences of such drugs, available pharmaceuticals in this group of drugs;
- Sympathetic Receptors Preventive Drugs: classification, clinical applications, toxic and side effects, precautions, differences of such drugs, available pharmaceuticals in this group of drugs;

Cardiovascular and Pulmonary Drugs Pharmacology

Code: 165
Presentation: Clinical Preliminaries, Clerkship
Prerequisite: Basic Principles of Medical Pharmacology
Type of Course: Theoretical (10 hours), Practical (- hours)

Total Goals:

1- Introduction to the pharmaceutical groups used in common diseases of cardiovascular and pulmonary systems according to the course syllabus, and also pharmacological specifications (absorption, distribution, metabolism, desorption, and effects of drugs on different body organs) on top or most-consumable drugs of each group;
2- Paying attention to the dangerous and important side effects of drugs used in common diseases of cardiovascular and pulmonary systems;
3- Considering the importance of studying the last guidelines and evidence in case of consumption before prescription of such drugs according to the speed of scientific developments and findings of clinical trials in case of introduction to new drugs and specifying the applications or side effects of cardiovascular and pulmonary drugs;

Description: introduction to the pharmaceutical groups used in common diseases of cardiovascular and pulmonary systems, and pharmacokinetic and pharmacodynamics specifications of such drugs, and observing some samples of changes in guidelines of application of such drugs arisen from the new evidence in clinical retrials;

Necessary Content:
Pharmaceutical groups used in hypertension and most-consumable drugs of each group:

- Vasodilators and angina therapy;
- Effective drugs on cardiac failure;
- Anti-rhythmic drugs;
- Diuretic drugs (carbonic anhydrase interrupters, thiazides, effective diuretics on Henle's loop, others);
- Drugs used in hyperlipidemia treatment;
- Bronchodilator and other drugs used in asthma, allergic rhinitis, cough;

Antimicrobial Drugs Pharmacology

Code: 166
Presentation: Clinical Preliminaries, Clerkship
Prerequisite: Basic Principles of Medical Pharmacology
Type of Course: Theoretical (10 hours), Practical (- hours)

Total Goals:

1- Introduction to the pharmaceutical groups effective on infectious diseases according to the course syllabus, and also pharmacological specifications (absorption, distribution, metabolism, desorption, and effects of drugs on different body organs) on top or most-consumable drugs of each group;
2- Paying attention to the dangerous and important side effects of drugs effective on the infectious diseases;
3- Considering the importance of studying the last guidelines and evidence in case of consumption before prescription of such drugs according to the speed of scientific developments and findings of clinical trials in case of introduction to new drugs and specifying the applications or side effects of infectious diseases;

Description: introduction to the pharmaceutical groups effective on the infectious diseases, and pharmacokinetic and pharmacodynamics specifications of such drugs, and observing some samples of changes in guidelines of application of such drugs arisen from the new evidence in clinical retrials;

Necessary Content:

- Penicillin and cephalosporin;
- Aminoglycosides;
- Sulfonamides and trimethoprim;
- Fluoroquinolones;
- Chloramphenicol, tetracycline and macrolides;
- Anti- mycobacteria drugs;
- Anti-viral drugs;
- Anti-helminth and anti- protozoal drugs;
- Other drugs and local disinfectants;

Internal Medicine Clerkship

Code: 188
Presentation: Clerkship: General Internal Diseases are necessarily presented in Clerkship I for two months;
Prerequisite: -
Type of Course: Obligatory, 3 Months (or 12 Weeks), 9 Clerkship Credits

Total Goals:

1-Connecting with patients, personnel and other health team members in a good manner, and showing specifications of good professional behavior in a suitable communication;

2-Obtaining medical history of patients suffering from common and important symptoms and complaints related to this section (attached list), performing necessary physical examinations, discussing important differential diagnoses, and suggesting the patient problem management and diagnosis;

3-Diagnosing the problems of common and important diseases patients related to this section (attached list), justify and make suggestion on the preventive, treatment, reference and rehabilitation actions, and also patient education in a level expected from the general practitioners based on the scientific evidence and local guidelines, and cooperate in patient problem management based on the standards of the section under supervision of upper ranks (according to the section regulations);

4-Performing the essential procedures related to this section (attached list) by observing the patients safety principles under appropriate supervision of higher ranks (according to the section regulations);

Description: in this course, students shall meet the defined goals by presence in clinical rounds, training clinics and performing the personal and group assignments. Required theoretical training classes shall be held to provide theoretical knowledge.

Educational Activities: learning activities of this section shall involve a harmonic combination of training on patient's bed, personal study and group discussion, presenting the disease cases, performing practical procedures under supervision of professor, and participating in educational sessions of group.
Schedule and composition of such activities and required fields for each activity including the hospital, clinic, health services centers, laboratory, emergency, Skill Lab. clinical skills learning center, are determined by each faculty of medicine in Clinical Study Guide according to the standards notified by secretariat of general medical education council.

Necessary Content : according to the different conditions of education in different faculties, it is necessary that the learning guides are determined by faculty of medicine according to the deed of capabilities expected from graduates of general

doctorate degree and with regard to the standards notified by secretariat of general medical education council, Ministry of Health and Medical Education, and delivered to the learners. The mentioned skills, main diagnostic and Para clinical methods and necessary drugs the student shall acquire sufficient knowledge on shall be specified in each clinical study guide.

The classes shall be presented in a way that they focus and deny the student's presence beside the patient and his/her clinical practices.

It is necessary for the educational department to determine, notify and execute the educational methods and program and student evaluation based on the scientific principles. Faculty of medicine confirms the program, supervision on execution and evaluation of program.

Supervision may be applied for the higher levels (interns, residents, fellowships, professors) and other relevant members of health team in order to ensure the patients' rights and safety considerations meet the learning goals of students. Faculty of medicine is responsible for determining the method of good supervision on each procedure or intervention.

Clinical Clerkship of Cardiovascular Diseases

Code: 190
Presentation: Clerkship I or II
Prerequisite: Courses of Clinical Preliminaries
Type of Course: Obligatory, 1 Month (4 Weeks), 3 Credits

Total Goals:

1-Connecting with patients, personnel and other health team members in a good manner, and showing specifications of good professional behavior in a suitable communication;

2-Obtaining medical history of patients suffering from common and important symptoms and complaints related to this section (attached list), performing necessary physical examinations, discussing important differential diagnoses, and suggesting the patient problem management and diagnosis;

3-Diagnosing the problems of common and important diseases patients related to this section (attached list), justify and make suggestion on the preventive, treatment, reference and rehabilitation actions, and also patient education in a level expected from the general practitioners based on the scientific evidence and local guidelines, and cooperate in patient problem management based on the standards of the section under supervision of upper ranks (according to the section regulations);

4-Performing the essential procedures related to this section (attached list) by observing the patients safety principles under appropriate supervision of higher ranks (according to the section regulations);

Description: in this course, students shall meet the defined goals by presence in clinical rounds, training clinics and performing the personal and group assignments. Required theoretical training classes shall be held to provide theoretical knowledge.

Educational Activities: learning activities of this section shall involve a harmonic combination of training on patient's bed, personal study and group discussion, presenting the disease cases, performing practical procedures under supervision of professor, and participating in educational sessions of group.

Schedule and composition of such activities and required fields for each activity including the hospital, clinic, health services centers, laboratory, emergency, Skill Lab. clinical skills learning center, are determined by each faculty of medicine in Clinical Study Guide according to the standards notified by secretariat of general medical education council.

Necessary Content: according to the different conditions of education in different faculties, it is necessary that the learning guides are determined by faculty of medicine according to the deed of capabilities expected from graduates of general

doctorate degree and with regard to the standards notified by secretariat of general medical education council, Ministry of Health and Medical Education, and delivered to the learners. The mentioned skills, main diagnostic and Para clinical methods and necessary drugs the student shall acquire sufficient knowledge on shall be specified in each clinical study guide.

The classes shall be presented in a way that they focus and deny the student's presence beside the patient and his/her clinical practices.
It is necessary for the educational department to determine, notify and execute the educational methods and program and student evaluation based on the scientific principles. Faculty of medicine confirms the program, supervision on execution and evaluation of program.

Supervision may be applied for the higher levels (interns, residents, fellowships, professors) and other relevant members of health team in order to ensure the patients' rights and safety considerations meet the learning goals of students. Faculty of medicine is responsible for determining the method of good supervision on each procedure or intervention.

Clinical Clerkship of Pediatrics

Pediatrics Clerkship
Theoretical Course of Pediatrics

Pediatrics Clerkship

Code: 192
Presentation: Clerkship I and II
Prerequisite: Clinical Preliminaries of Pediatrics
Type of Course: Obligatory, 3 Months (or 12 Weeks), Total 9 Clerkship Credits

Total Goals:

1-Connecting with patients, personnel and other health team members in a good manner, and showing specifications of good professional behavior in a suitable communication;

2-Obtaining medical history of patients suffering from common and important symptoms and complaints related to this section (attached list), performing necessary physical examinations, discussing important differential diagnoses, and suggesting the patient problem management and diagnosis;

3-Diagnosing the problems of common and important diseases patients related to this section (attached list), justify and make suggestion on the preventive, treatment, reference and rehabilitation actions, and also patient education in a level expected from the general practitioners based on the scientific evidence and local guidelines, and cooperate in patient problem management based on the standards of the section under supervision of upper ranks (according to the section regulations);

4-Performing the essential procedures related to this section (attached list) by observing the patients safety principles under appropriate supervision of higher ranks (according to the section regulations);

Description: in this course, students shall meet the defined goals by presence in clinical rounds, training clinics and performing the personal and group assignments. Required theoretical training classes shall be held to provide theoretical knowledge.

Educational Activities: learning activities of this section shall involve a harmonic combination of training on patient's bed, personal study and group discussion, presenting the disease cases, performing practical procedures under supervision of professor, and participating in educational sessions of group.

Schedule and composition of such activities and required fields for each activity including the hospital, clinic, health services centers, laboratory, emergency, Skill Lab. clinical skills learning center, are determined by each faculty of medicine in Clinical Study Guide according to the standards notified by secretariat of general medical education council.

Necessary Content : the universities presenting student program (clerkship) as Clerkship I and I (student and externship) can use the suggested program in the presented form, and those not executing externship program in a separate program present total suggested subjects for Clerkship I and II in the form of educational clerkship program.

The students of this program are advised to attend clinics, general wards, and emergency for 60-70% of clinical education, and in subspecialty sections for 30-40% of the program duration, and minimize the rotational programs of students of this program in subspecialty sections.

According to the different conditions of education in different faculties, it is necessary that the learning guides are determined by faculty of medicine according to the deed of capabilities expected from graduates of general doctorate degree and with regard to the standards notified by secretariat of general medical education council, Ministry of Health and Medical Education, and delivered to the learners. The mentioned skills, main diagnostic and Para clinical methods and necessary drugs the student shall acquire sufficient knowledge on shall be specified in each clinical study guide.

The classes shall be presented in a way that they focus and deny the student's presence beside the patient and his/her clinical practices.

It is necessary for the educational department to determine, notify and execute the educational methods and program and student evaluation based on the scientific principles. Faculty of medicine confirms the program, supervision on execution and evaluation of program.

Supervision may be applied for the higher levels (interns, residents, fellowships, professors) and other relevant members of health team in order to ensure the patients' rights and safety considerations meet the learning goals of students. Faculty of medicine is responsible for determining the method of good supervision on each procedure or intervention.

Pediatrics I

Code: 194
Presentation: Clerkship
Prerequisite: -
Type of Course: Theoretical (68 hours)

Total Goals: according to the attached list,
A. Facing each common and important symptoms and complaints:

1-Describing the definition;

2-Describing focused history taking and physical exam;

3-Discussing important differential diagnoses, and suggesting necessary steps for reaching the patient problem diagnosis and management;

B. On common and important diseases:

1. Explaining the definition, etiology and epidemiology of disease;

2-Explaining the problems of patients suffering from the important common diseases;

3-Describing the patient diagnosis methods;

4-Explaining the most important preventive proceedings in different levels including the patient treatment and rehabilitation based on the scientific evidence and local guidelines to the extent expected from general practitioner;

5-Using the knowledge learnt for clinical reasoning and recommendation of diagnostic or medical approaches in facing the scenario or describing the patients related to such diseases;

C. Paying attention to the important issues to be necessarily observed in clinical environment of this field;

Description: meeting the specific goals through attending the class, clinical skill learning center (skill laboratory), training workshop and performing the personal and group assignments;

Educational Activities: learning activities of this course include the harmonic composition of theoretical education, personal study and group discussion, and performing other learning assignments.
Schedule and composition of such activities and required fields for each activity including the class, Skill Lab., clinical sites, are determined by each faculty of medicine in study guide according to the standards notified by secretariat of general medical education council.

Necessary Content : According to the different conditions of clinical education in different faculties, it is necessary that the learning guides are determined by faculty of medicine according to the deed of capabilities expected from graduates of general doctorate degree and with regard to the standards notified by secretariat of general medical education council, Ministry of Health and Medical Education, and delivered to the learners.
The amount and time of presenting the theoretical classes shall not fail the clinical learning of students.
It is necessary for the educational department to determine, notify and execute the educational methods and program and student evaluation based on the scientific principles. Faculty of medicine confirms the program, supervision on execution and evaluation of program.

Syllabus:

1-Obtaining medical history and physical examination of children;

2-Introduction to normal and abnormal growth in children and using the growth curves;

2. Introduction to the normal and abnormal evolution and growth evaluation means in children according to the national program of healthy child and early child development;
3. Nutrition with mother milk, consulting the feeding mother, mother diseases and consuming drugs during milk feeding;
4. Nutrition during the different periods from six-month age to adulthood (assessment, consultation) according to the national program of healthy child and early child development;
5. Common nutritional problems during childhood and adolescence according to the national program of healthy child (FTT, obesity and lack of micronutrients);
6. Promoting the children health in the field of preventing the accidents, poisoning, burning, contagious and non-contagious diseases, role of physician according to the national program of healthy child (self-reading);
7. Introduction to national vaccination program (as self-reading);
8. Introduction to evaluation of disease child according to Mana national program;
9. Examining the healthier infant and initial cares in birth room;
10. Respiratory distress, apnea and cyanosis in infants;
11. Jaundice in infants;
12. Convulsion and hypoglycemia in infants;
13. Nutrition and fluid therapy in infants and children;
14. Fever in children;
15. Bellyache in children;
16. Vomiting and nausea in children;
17. Constipation in children;
18. Jaundice in children;
19. Hepatosplenomegaly in children;
20. Acute loose paralysis in children;
21. Lymphadenopathy in children;
22. Polyuria in children;
23. Introduction to common symptoms of malign diseases in children (as self-reading);
24. Infection in infants;
25. Lower respiratory system infection in children;
26. Upper respiratory system infection and treatment of respiratory distress and air way obstruction child (croup, epiglottis, and foreign object);
27. Brain infection in children (pathophysiology, symptoms and signs);
28. Headache in children (as self-reading);
29. Convulsion in children;
30. Clinical symptoms, signs and diagnosis of common neuromuscular diseases in children (lame child);
31. Coagulation disorders in children;

32. Anemia in children;
33. Natural maturity and normal and abnormal maturity signs;
34. Hypocalcaemia and rictus in children and infants;
35. Urinary infection in children (as self-reading);
36. Glomerulonephritis and nephrotic syndrome in children;
37. Oliguria and kidney deficiency in children;
38. Asthma;
39. Hives, angioedema, anaphylaxis and atopic dermatitis and serum disease;
40. Salmonellosis- Brucellosis;
41. Pertussis, dysphoria and tetanus;
42. Intestinal parasitic diseases (as self-reading);
43. Osteomyelitis and septic arteritis;
44. Common viral dermal diseases (rubella, scarlet, Roseola, chicken pox) (as self-reading);
45. Common non-dermal viral diseases (as self-reading);
46. Hypothyroid/ hyperthyroid in children;
47. Tuberculosis in children;
48. Common parasitic diseases (Kala-azar and malaria) (as self-reading);
49. Common vasculitis in children (Kawasaki, Henoch) (as self-reading);
50. Sugar diabetics and DKA;
51. Introduction to common and important cardiac congenital diseases;
52. Hypertension in children;
53. Heart deficiency in children;
54. Acute diarrhea (as self-reading);
55. Common genetic syndromes (including MR) (as self-reading);
56. Common symptoms of metabolic congenital diseases;
57. Common dermal diseases in children;
58. Restlessness;
59. Lameness;
60. Disorder of urine control and enuresis;
61. Shock in children;
62. Gastrointestinal bleeding (upper and lower);
63. Consciousness disorder (coma and delirium);
64. Abnormal U/A analysis;
65. Hyponatremia and hypernatremia in children;
66. Acid and base disorders in children;
67. Treatment of caustic matters digestion with foreign object;
68. sinking- electrical shocks;
69. Common poisoning in children;
70. Hepatitis;
71. Rheumatic fever and endocarditis;

It is advised to the educational department to specify and notify the evaluating the learning activities of theoretical subjects performed as self-reading at the beginning of educational process.
In order to educate national program of healthy child care, it is necessary to establish some special clinics with coordination of health deputy of universities under supervision of faculty members of department of pediatrics by presence of the interns, clerkship students and specialty residents of pediatrics.
It is advised to t hold Mana training workshops (before or at the beginning of pediatrics) for learners of this program in addition to the theoretical education of Mana.
Secretariat of general medical education council may change the list of common symptoms and signs, important syndromes and diseases, and necessary procedures in this section in necessary time intervals if required and according to the priorities at discretion and coordination of board of general medicine and faculties of medicine.

Pediatrics II

Code: 195
Presentation: Clerkship
Prerequisite: Pediatrics I
Type of Course: Theoretical (17 hours)

Total Goals: according to the attached list,
A. Facing each common and important symptoms and complaints:

1-Describing the definition;

2-Describing focused history taking and physical exam;

3-Discussing important differential diagnoses, and suggesting necessary steps for reaching the patient problem diagnosis and management;

B. On common and important diseases:

1-Explaining the definition, etiology and epidemiology of disease;

2-Explaining the problems of patients suffering from the important common diseases;

3-Describing the patient diagnosis methods;

4-Explaining the most important preventive proceedings in different levels including the patient treatment and rehabilitation based on the scientific evidence and local guidelines to the extent expected from general practitioner;

5-Using the knowledge learnt for clinical reasoning and recommendation of diagnostic or medical approaches in facing the scenario or describing the patients related to such diseases;

C. Paying attention to the important issues to be necessarily observed in clinical environment of this field;

Description: Meeting the specific goals through attending the class, clinical skill learning center (skill laboratory), training workshop and performing the personal and group assignments;

Educational Activities: learning activities of this course include the harmonic composition of theoretical education, personal study and group discussion, and performing other learning assignments.
Schedule and composition of such activities and required fields for each activity including the class, Skill Lab., clinical sites, are determined by each faculty of medicine in study guide according to the standards notified by secretariat of general medical education council.

Necessary Content : According to the different conditions of clinical education in different faculties, it is necessary that the learning guides are determined by faculty of medicine according to the deed of capabilities expected from graduates of general doctorate degree and with regard to the standards notified by secretariat of general medical education council, Ministry of Health and Medical Education, and delivered to the learners.
The amount and time of presenting the theoretical classes shall not fail the clinical learning of students.
It is necessary for the educational department to determine, notify and execute the educational methods and program and student evaluation based on the scientific principles. Faculty of medicine confirms the program, supervision on execution and evaluation of program.

Syllabus:

1-Introduction to children normal and abnormal growth patterns and using growth curves and introduction to normal and abnormal evolution patterns and children growth evaluation means according to national program of healthy child and early child development;

2-Treatment of restlessness child;
3-Treatment of fever child;
4-Treatment of cerebral infection symptoms child;
5-Treatment of lameness child;
6-Urine control and enuresis disorder in children;
7-Children shock treatment;
8-Upper and lower gastrointestinal bleeding child treatment;
9-Consciousness (coma and delirium) disorders children treatment;
10-Abnormal U/A analysis;
11-Children hyponatremia and hypernatremia treatment;
12-Children acid and base disorders treatment;
13-Treatment of a child digesting caustic matter or a foreign object;
14-Treatment of a child sinking or electrical shock;

15-Children common poisoning treatment;
16-Hepatitis;
17-Rheumatic and endocarditis fever;

Secretariat of general medical education council may change the list of common symptoms and signs, important syndromes and diseases, and necessary procedures in this section in necessary time intervals if required and according to the priorities at discretion and coordination of board of general medicine and faculties of medicine.

Clinical Education of General Surgery

General Surgery Clerkship
Theoretical Course of General Surgery

General Surgery Clerkship

Code: 196
Presentation: Clerkship: general surgery is necessarily presented in Clerkship I for two months;
Prerequisite: Clinical Preliminaries of Pediatrics
Type of Course: Obligatory, 2 Months (or 8 Weeks), 6 Credits

Total Goals:

1-Connecting with patients, personnel and other health team members in a good manner, and showing specifications of good professional behavior in a suitable communication;

2-Obtaining medical history of patients suffering from common and important symptoms and complaints related to this section (attached list), performing necessary physical examinations, discussing important differential diagnoses, and suggesting the patient problem management and diagnosis;

3-Diagnosing the problems of common and important diseases patients related to this section (attached list), justify and make suggestion on the preventive, treatment, reference and rehabilitation actions, and also patient education in a level expected from the general practitioners based on the scientific evidence and local guidelines, and cooperate in patient problem management based on the standards of the section under supervision of upper ranks (according to the section regulations);

4-Performing the essential procedures related to this section (attached list) by observing the patients safety principles under appropriate supervision of higher ranks (according to the section regulations);

Description: in this course, students shall meet the defined goals by presence in clinical rounds, training clinics and performing the personal and group assignments. Required theoretical training classes shall be held to provide theoretical knowledge.

Educational Activities: learning activities of this section shall involve a harmonic combination of training on patient's bed, personal study and group discussion, presenting the disease cases, performing practical procedures under supervision of professor, and participating in educational sessions of group.

Schedule and composition of such activities and required fields for each activity including the hospital, clinic, health services centers, laboratory, emergency, Skill Lab. clinical skills learning center, are determined by each faculty of medicine in Clinical Study Guide according to the standards notified by secretariat of general medical education council.

Necessary Content: According to the different conditions of education in different faculties, it is necessary that the learning guides are determined by faculty of medicine according to the deed of capabilities expected from graduates of general doctorate degree and with regard to the standards notified by secretariat of general medical education council, Ministry of Health and Medical Education, and delivered to the learners. The mentioned skills, main diagnostic and Para clinical methods and necessary drugs the student shall acquire sufficient knowledge on shall be specified in each clinical study guide.
The classes shall be presented in a way that they focus and deny the student's presence beside the patient and his/her clinical practices.
It is necessary for the educational department to determine, notify and execute the educational methods and program and student evaluation based on the scientific principles. Faculty of medicine confirms the program, supervision on execution and evaluation of program.
Supervision may be applied for the higher levels (interns, residents, fellowships, professors) and other relevant members of health team in order to ensure the patients' rights and safety considerations meet the learning goals of students. Faculty of medicine is responsible for determining the method of good supervision on each procedure or intervention.

Theoretical Course of General Surgery

Code: 197
Presentation: Clerkship
Prerequisite: -
Type of Course: Obligatory, 2 Months (8 Weeks), 8 Credits

Total Goals:

1-Cooperating with personnel and other health team members in a good manner;

2-Indicating specifications of good professional behavior in communications in a good manner, and indicating the commitment, skillfulness, and self-confidence necessary for performing the professional responsibilities especially under different clinical conditions;

3-Obtaining medical history of patients suffering from common and important symptoms and complaints related to this section (attached list), performing necessary physical examinations, discussing important differential diagnoses, and suggesting the patient problem management and diagnosis;

4-Diagnosing the problems of common and important diseases patients related to this section (attached list), justify and make suggestion on the preventive, treatment, reference and rehabilitation actions, and also patient education in a level expected from the general practitioners based on the scientific evidence and local guidelines, and cooperate in patient problem management based on the standards

of the section under supervision of upper ranks (according to the section regulations);
5-Performing the essential procedures related to this section (attached list) by observing the patients safety principles under appropriate supervision of higher ranks (according to the section regulations);
Description: in this course, students shall acquire necessary capabilities for performing independent services related to this section in general medicine according to the capabilities expected from general practitioners by cooperation in presenting health services in the related fields (hospital, clinic, health services centers, etc.), attending the specified educational sessions, and personal study;
Educational Activities: Schedule and composition of such activities and required fields for each activity including the hospital, clinic, health services centers, laboratory, emergency, Skill Lab. clinical skills learning center, are determined by each faculty of medicine in Clinical Study Guide according to the standards notified by secretariat of general medical education council.
Necessary Content : according to the different conditions of education in different faculties and sections, it is necessary that the learning guides are determined by faculty of medicine according to the deed of capabilities expected from graduates of general doctorate degree.
The classes shall be presented in a way that they focus and deny the student's presence beside the patient and his/her clinical practices. Type and amount of duties and services assigned to interns in each clinical rotation shall be according to the educational goals of section, not disturbing the learning of necessary expected skills.
At least one third of interns training time shall be allocated to clinical education and emergency.
Supervision may be applied for the higher levels (interns, fellowships, professors) and other relevant members of health team in order to ensure the patients' rights and safety considerations meet the learning goals of students. Faculty of medicine is responsible for determining the method of good supervision on each procedure or intervention.

Common Symptoms and Complaints:
1-Neck tumor;
2-Dysphagia;
3-Breast tumor;
4-Breast pain;
5-Breast secretion;
6-Vomiting and nausea;
7-Acute stomachache;
8-Chronic stomachache;
9-Stomach tumor;
10-Obstructive jaundice;
11-Upper gastrointestinal bleeding (hematomas);

12-Lower gastrointestinal bleeding (bleeding through rectum);
13-Groin tumor;
14-Feet lameness (claudication);
15-Upper limb acute pain according to the venous problems;
16-Upper limb chronic pain according to the venous problems;
17-Nodule thyroid;
18-Lymphadenopathy of neck zones, groin axilla;
19-Plural effusion;
20-Failure in gas and stool disposal;
21-Stool disposal disorder;
22-Abdominal distension;
23-Rectum pain;
24-Rectum itching;

Important Syndromes and Diseases:
Must Know:
1- Shock;
2- Burning;
3- Gastric cancer;
4- Acute appendices;
5- Colon maligns diseases;
6- Small and large intestines benign diseases;
7- Gastric and duodenum peptic diseases;
8- Acute and chronic pancreatitis;
9- Intestinal obstruction;
10- Abdominal hernia and groin;
11- Biliary tract diseases by focusing on the gallstone diseases;
12- Pancreas cysts by focusing on the malign pancreas diseases;
13- Malign breast diseases;
14- Benign thyroid diseases by focusing on goiter and hyperthyroidism;
15- Malign thyroid diseases;
16- Malign and benign liver cysts by focusing on the common diseases in country;
17- Major trauma (injury administration based on ATLS findings);
18- Managing water, electrolyte and acid- base in surgery patients;
19- Administering surgery patients before and after operations;
20- Bleeding and surgery hemostasis and principles of blood transfusion;
21- Acute surgical cares;
22- Surgical infections;
23- Administering lesions and lesion repair;
24- Gastric reflux to esophagus;
25- Medical history and examining cardiovascular surgery patient;
26- Treatment (classification, CT findings, emergencies), and administering patient skull trauma (head injury).

27- Administering spinal cord trauma patient;
28- Brain vascular diseases;

Better to Know:

1- Esophageal carcinoma;
2- Intestinal inflammatory diseases;
3- Diverticular diseases;
4- Benign breast diseases;
5- Parathyroid diseases;
6- Adrenal diseases;
7- Peripheral vascular diseases with lesions in lower limb;
8- Vessels aneurysm diseases;
9- Venous diseases by focusing on deep vessel thrombosis and varicose diseases;
10- Common cases and pediatric surgery emergencies;
11- Nutrition in surgery patients;
12- Malign skin lesions;
13- Port venous hypertension and its side effects;
14- Spleen and lymphatic gland diseases;
15- Chest, trachea, lung and pleura diseases;
16- Brain tumors (types, symptoms, findings, prentice);
17- Hydrocephalia and maningocephalia;
18- Backache and lumbar disc herniation (low back pain and HLD);
19- Small colon malign diseases;
20- Obesity;

During this rotation, the common diagnostic methods and tests shall have application in clinical activity of general practitioner, and request and interpretation of results of such tests and methods in common surgical diseases and disorders.
During this rotation, the common drugs used in clinical activity of general practitioner, and writing prescription in common surgical disorders and diseases shall be trained.
Learners will learn Better To Know items for treatment of a patient related to the section as self-study or electronic form.
During this course, it is necessary to learn and practice the safety considerations of patients.

Necessary Procedures:

1-Controlling the foreign bleedings;
2-Using surgical equipment;
3-Local anesthesia;
4-Stitching and removing the skin stitch;
5-Taking care of lesion including washing and dressing;

6-Cooperation in performing the complicated dresses with simple debridement;
7-Cooperation in abscess drainage;
8-Placing the gastric tube;
9-Placing urinary catheter;
10-Cooperation in placing rib cage tube;
11-Needle tracheostomy in pressing pneumothorax;
12-Partnership in performing Cricothyroidothermia;
13-Thoracosynthesis;
14-Abdominal Para synthesis;
15-Administering the burning lesion;
16-Installing rectal tube;
17-Hematoma discharge under nail (preferable);
18-Tracheostomy with tube (preferable);
19-Circumcision (preferable);
20-Peripheral vascular cut down (preferable);

Secretariat of general medical education council may change the list of common symptoms and signs, important syndromes and diseases, and necessary procedures in this section in necessary time intervals if required and according to the priorities at discretion and coordination of board of general medicine and faculties of medicine.
Fractures and dislocations of spinal cord are trained in neurosurgery ward.

Surgical Diseases

Code: 198
Presentation: Clerkship
Prerequisite: -
Type of Course: Theoretical (85 hours)

Total Goals: according to the attached list,
A. Facing each common and important symptoms and complaints:
1-Describing the definition;
2-Describing focused history taking and physical exam;
3-Discussing important differential diagnoses, and suggesting necessary steps for reaching the patient problem diagnosis and management;
B. On common and important diseases:
1-Explaining the definition, etiology and epidemiology of disease;
2-Explaining the problems of patients suffering from the important common diseases;
3-Describing the patient diagnosis methods;
4-Explaining the most important preventive proceedings in different levels including the patient treatment and rehabilitation based on the scientific evidence and local guidelines to the extent expected from general practitioner;

5-Using the knowledge learnt for clinical reasoning and recommendation of diagnostic or medical approaches in facing the scenario or describing the patients related to such diseases;

C. Paying attention to the important issues to be necessarily observed in clinical environment of this field;

Description: Meeting the specific goals through attending the class, clinical skill learning center (skill laboratory), training workshop and performing the personal and group assignments;

Educational Activities: learning activities of this course include the harmonic composition of theoretical education, personal study and group discussion, and performing other learning assignments.
Schedule and composition of such activities and required fields for each activity including the class, Skill Lab., clinical sites, are determined by each faculty of medicine in study guide according to the standards notified by secretariat of general medical education council.
Necessary Content: According to the different conditions of clinical education in different faculties, it is necessary that the learning guides are determined by faculty of medicine according to the deed of capabilities expected from graduates of general doctorate degree and with regard to the standards notified by secretariat of general medical education council, Ministry of Health and Medical Education, and delivered to the learners.
The amount and time of presenting the theoretical classes shall not fail the clinical learning of students.
It is necessary for the educational department to determine, notify and execute the educational methods and program and student evaluation based on the scientific principles. Faculty of medicine confirms the program, supervision on execution and evaluation of program.

Syllabus:
A. Treatment of Common Symptoms and Complaints in Surgical Diseases:

1-Dysphagia;
2-Head and neck tumors;
3-Common breast problems: tumor, pain and secretion;
4-Vomiting and nausea;
5-Acute and chronic stomach ache;
6-Abdominal and groin tumor;
7-Obstructive jaundice;
8-Gastrointestinal bleeding (upper and lower);
9-Foot lameness (claudication);
10-Lower limb acute pain according to the vascular problems;

11-Lower limb chronic pain according to the vascular problems;
12-Nodule thyroid;
13-Lymphadenopathy of neck zones, groin axilla;
14-Plural effusion;
15-Stool disposal disorder;
16-Common anorectal complaints (anal pain and itching);
17-Shock;
18-Burning;

B. Common and Important Diseases in General Surgery:

19-Gastric cancer;
20-Acute appendices;
21-Colon malign diseases;
22-Small and large intestines, and anus benign diseases;
23-Gastric and duodenum peptic diseases;
24-Acute and chronic pancreatitis;
25-Intestinal obstruction;
26-Abdominal hernia and groin;
27-Biliary tract diseases by focusing on the gallstone diseases;
28-Pancreas cysts by focusing on the malign pancreas diseases;
29-Malign breast diseases;
30-Benign thyroid diseases by focusing on goiter and hyperthyroidism;
31-Malign thyroid diseases;
32-Malign and benign liver cysts by focusing on the common diseases in country.
33-Major trauma (injury administration based on ATLS findings)
34-Managing water, electrolyte and acid- base in surgery patients;
35-Administering surgery patients before and after operations;
36-Bleeding and surgery hemostasis and principles of blood transfusion;
37-Acute surgical cares;
38-Surgical infections;
39-Administering lesions and lesion repair;
40-Gastric reflux to esophagus;
41-Medical history and examining cardiovascular surgery patient;
42-Treatment (classification, CT findings, emergencies), and administering patient skull trauma (head injury);
43-Administering spinal cord trauma patient;
44-Brain vascular diseases;

Secretariat of general medical education council may change the list of common symptoms and signs, important syndromes and diseases, and necessary procedures in this section in necessary time intervals if required and according to the priorities at discretion and coordination of board of general medicine and faculties of medicine.

Orthopedics Clerkship

Code: 199
Presentation: Clerkship (Clerkship I and II according to program of university)
Prerequisite: -
Type of Course: Obligatory, 1 Month (4 Weeks), 3 Credits

Total Goals:

1. Connecting with patients, personnel and other health team members in a good manner, and showing specifications of good professional behavior in a suitable communication;
2. Obtaining medical history of patients suffering from common and important symptoms and complaints related to this section (attached list), performing necessary physical examinations, discussing important differential diagnoses, and suggesting the patient problem management and diagnosis;
3. Diagnosing the problems of common and important diseases patients related to this section (attached list), justify and make suggestion on the preventive, treatment, reference and rehabilitation actions, and also patient education in a level expected from the general practitioners based on the scientific evidence and local guidelines, and cooperate in patient problem management based on the standards of the section under supervision of upper ranks (according to the section regulations);

Performing the essential procedures related to this section (attached list) by observing the patients safety principles under appropriate supervision of higher ranks (according to the section regulations);
Description: in this course, students shall meet the defined goals by presence in clinical rounds, training clinics and performing the personal and group assignments. Required theoretical training classes shall be held to provide theoretical knowledge.

Educational Activities: learning activities of this section shall involve a harmonic combination of training on patient's bed, personal study and group discussion, presenting the disease cases, performing practical procedures under supervision of professor, and participating in educational sessions of group.
Schedule and composition of such activities and required fields for each activity including the hospital, clinic, health services centers, laboratory, emergency, Skill Lab. clinical skills learning center, are determined by each faculty of medicine in Clinical Study Guide according to the standards notified by secretariat of general medical education council.
Necessary Content : according to the different conditions of education in different faculties, it is necessary that the learning guides are determined by faculty of medicine according to the deed of capabilities expected from graduates of general

doctorate degree and with regard to the standards notified by secretariat of general medical education council, Ministry of Health and Medical Education, and delivered to the learners. The mentioned skills, main diagnostic and Para clinical methods and necessary drugs the student shall acquire sufficient knowledge on shall be specified in each clinical study guide.
The classes shall be presented in a way that they focus and deny the student's presence beside the patient and his/her clinical practices.
It is necessary for the educational department to determine, notify and execute the educational methods and program and student evaluation based on the scientific principles. Faculty of medicine confirms the program, supervision on execution and evaluation of program.
Supervision may be applied for the higher levels (interns, residents, fellowships, professors) and other relevant members of health team in order to ensure the patients' rights and safety considerations meet the learning goals of students. Faculty of medicine is responsible for determining the method of good supervision on each procedure or intervention.

Orthopedics Clerkship

Code: 200
Presentation: Clerkship
Prerequisite: -
Type of Course: Elective, 15 Days to 1 Month (2-4 Weeks), 2 Credits per Two-Week Clerkship

Total Goals:

1- Cooperating with personnel and other health team members in a good manner;
2- Indicating specifications of good professional behavior in communications in a good manner, and indicating the commitment, skillfulness, and self-confidence necessary for performing the professional responsibilities especially under different clinical conditions;
3- Obtaining medical history of patients suffering from common and important symptoms and complaints related to this section (attached list), performing necessary physical examinations, discussing important differential diagnoses, and suggesting the patient problem management and diagnosis;
4- Diagnosing the problems of common and important diseases patients related to this section (attached list), justify and make suggestion on the preventive, treatment, reference and rehabilitation actions, and also patient education in a level expected from the general practitioners based on the scientific evidence and local guidelines, and cooperate in patient problem management based on the standards of the section under supervision of upper ranks (according to the section regulations);

5- Performing the essential procedures related to this section (attached list) by observing the patients safety principles under appropriate supervision of higher ranks (according to the section regulations);

Description: In this course, students shall acquire necessary capabilities for performing independent services related to this section in general medicine according to the capabilities expected from general practitioners by cooperation in presenting health services in the related fields (hospital, clinic, health services centers, etc.), attending the specified educational sessions, and personal study; Educational Activities: Schedule and composition of such activities and required fields for each activity including the hospital, clinic, health services centers, laboratory, emergency, Skill Lab. clinical skills learning center, are determined by each faculty of medicine in Clinical Study Guide according to the standards notified by secretariat of general medical education council.
Necessary Content: according to the different conditions of education in different faculties and sections, it is necessary that the learning guides are determined by faculty of medicine according to the deed of capabilities expected from graduates of general doctorate degree.

The classes shall be presented in a way that they focus and deny the student's presence beside the patient and his/her clinical practices. Type and amount of duties and services assigned to interns in each clinical rotation shall be according to the educational goals of section, not disturbing the learning of necessary expected skills. At least one third of interns training time shall be allocated to clinical education. Supervision may be applied for the higher levels (interns, fellowships, professors) and other relevant members of health team in order to ensure the patients' rights and safety considerations meet the learning goals of students. Faculty of medicine is responsible for determining the method of good supervision on each procedure or intervention.

Common Symptoms and Complaints:

1. Knee pain including osteoarthritis, lesions in meniscus and ligaments, and joint liquid;
2. Hip pain including osteoarthritis, necrosis avascular;
3. Foot and ankle pain including cartilage and ligament lesions, and flat feet;
4. Shoulder pain including inflammatory lesions (boresight, tendinitis and prearthritis) and instability;
5. Elbow pain including elbow of tennis players;
6. Hand and wrist pain carpal tunnel syndrome, ganglion and Kienbock disease;
7. Backache and neck ache;
8. Child limping;

9-Congenital limb deformity including congenital hip dysplasia, bandy-legged and non-congenital, including Genovarum and Genuvalogue;

10-Bone and soft tissue tumors;

11-Joints inflammation;

12-Multiple trauma;

13-Fracture and dislocations of upper and lower limbs, hips, spinal cord;

During this rotation, the common diagnostic methods and tests shall have application in clinical activity of general practitioner, and request and interpretation of results of such tests and methods in common orthopedic diseases and disorders.
Important Syndromes and Diseases:

1-Common hip diseases;

2-Common knee diseases;

3-Common ankle diseases;

4-Common shoulder diseases;

5-Common elbow diseases;

6-Common wrist diseases;

7-Common spinal cord diseases;

8-Common limbs and spinal cord deformities;

9-Benign musculoskeletal lesions including common benign tumors of soft tissues and bone;

9. Malign musculoskeletal lesions including common malign tumors of soft tissues and bone;

11-Peripheral nervous lesions and pressure neuropathies by focusing on the carpal tunnel syndrome;

12-Neuromuscular diseases by focusing on cerebral palsy (CP), poliomyelitis, muscular dystrophies (elective);

13-Metabolic diseases by focusing on rictus, osteomalacia, osteoporosis, and gout (elective);

14-Bone and joint infections by focusing on septic arthritis, acute and chronic osteomyelitis, spinal cord tuberculosis and hand infections;

15-Upper limbs fracture and displacement;

16-Hip and lower limbs fracture and displacement;

17-Spinal cord fracture and displacement;

18-Amputation;

19-Side effects of fractures and dislocations by focusing on the compartment syndrome, thrombosis, and depth veins and fatty emboli;

It is necessary to review the anatomy and physiology of related section by focusing on the clinical application in duties of general practitioner.
During this rotation, the common diagnostic methods and tests shall have application in clinical activity of general practitioner, and request and interpretation of results of such tests and methods in common orthopedic diseases and disorders.

Necessary Procedures:

1-Ortolani and Barlow tests on infant's hip;
2-Performing ATLS (advanced trauma life support) in multiple trauma disease;
3-Performing temporary motionless of limbs with types of splinting;
4-Producing and installing plaster splinters;
5-Performing types of bandage in types of skeletal and joint damages;
6-Installing dermal tension;
7-Controlling the dangerous limbs bleeding;
8-Taking care of lesion including washing and dressing;
9-Transferring patient;

Preferable Procedures:

10-Discharging the hematoma under nail;
11-Aspiration of knee joint liquid;
12-Setting the shoulder dislocation (close setting of shoulder joint);
13-Dermal traction of lower limbs fractures;

Specialized Physical Examinations of Orthopedics (Adults and Children):
-Examining the spinal cord (including SLR- Straight Leg Raising);
-Examinations of hip (including Ortolani and Barlow tests);
-Knee (ligaments, meniscus, liquid existence), knee liquids especially in terms of liquid existence;
-Foot and ankle examination techniques;
-Should examination techniques;
-Elbow examination techniques;
-Wrist, hand and fingers examination techniques;
-Studying the limbs in terms of bleeding (examining the peripheral impulses and capillary refill);
-Nervous examinations of limbs (nervous roots and peripheral nerves), describing the lesions of peripheral nerves;

Secretariat of general medical education council may change the list of common symptoms and signs, important syndromes and diseases, and necessary procedures in this section in necessary time intervals if required and according to the priorities at discretion and coordination of board of general medicine and faculties of medicine.

Orthopedic Diseases

Code: 201
Presentation: Clerkship
Prerequisite: -
Type of Course: Theoretical (51 hours)

Total Goals: According to the attached list,

A. Facing each common and important symptoms and complaints:

1-Describing the definition;

2-Describing focused history taking and physical exam;

3-Discussing important differential diagnoses, and suggesting necessary steps for reaching the patient problem diagnosis and management;

B. On common and important diseases:

1-Explaining the definition, etiology and epidemiology of disease;

2-Explaining the problems of patients suffering from the important common diseases;

3-Describing the patient diagnosis methods;

4-Explaining the most important preventive proceedings in different levels including the patient treatment and rehabilitation based on the scientific evidence and local guidelines to the extent expected from general practitioner;

5-Using the knowledge learnt for clinical reasoning and recommendation of diagnostic or medical approaches in facing the scenario or describing the patients related to such diseases;

C. Paying attention to the important issues to be necessarily observed in clinical environment of this field;

Description: Meeting the specific goals through attending the class, clinical skill learning center (skill laboratory), training workshop and performing the personal and group assignments;

Educational Activities: learning activities of this course include the harmonic composition of theoretical education, personal study and group discussion, and performing other learning assignments.

Schedule and composition of such activities and required fields for each activity including the class, Skill Lab., clinical sites, are determined by each faculty of medicine in study guide according to the standards notified by secretariat of general medical education council.

Necessary Content: According to the different conditions of clinical education in different faculties, it is necessary that the learning guides are determined by faculty of medicine according to the deed of capabilities expected from graduates of general doctorate degree and with regard to the standards notified by secretariat of general medical education council, Ministry of Health and Medical Education, and delivered to the learners.

The amount and time of presenting the theoretical classes shall not fail the clinical learning of students.

It is necessary for the educational department to determine, notify and execute the educational methods and program and student evaluation based on the scientific

principles. Faculty of medicine confirms the program, supervision on execution and evaluation of program.

Syllabus:

A. Treatment of Common Symptoms and Complaints in Orthopedics:

1-Knee pain including osteoarthritis, lesions in meniscus and ligaments, and joint liquid;

2-Hip pain including osteoarthritis, necrosis avascular;

3-Foot and ankle pain including cartilage and ligament lesions, and flat feet;

4-Shoulder pain including inflammatory lesions (boresight, tendinitis and prearthritis) and instability;

5-Elbow pain including elbow of tennis players;

6-Hand and wrist pain carpal tunnel syndrome, ganglion and Kienbock disease;

7-Backache and neck ache;

8-Child limping;

9-Congenital limb deformity including congenital hip dysplasia, bandy-legged and non-congenital, including Genovarum and Genuvalogue;

10-Bone and soft tissue tumors;

11-Joints inflammation;

12-Multiple trauma;

13-Fracture and dislocations of upper and lower limbs, hips, spinal cord;

B. Common and Important Diseases in Orthopedics:

14-Common hip diseases;

15-Common knee diseases;

16-Common ankle diseases;

17-Common shoulder diseases;

18-Common elbow diseases;

19-Common wrist diseases;

20-Common spinal cord diseases;

21-Benign musculoskeletal lesions including common benign tumors of soft tissues and bone;

22-Malign musculoskeletal lesions including common malign tumors of soft tissues and bone;

23-Peripheral nervous lesions and pressure neuropathies by focusing on the carpal tunnel syndrome;

24-Neuromuscular diseases by focusing on cerebral palsy (CP), poliomyelitis, muscular dystrophies (elective);

25-Metabolic diseases by focusing on rictus, osteomalacia, osteoporosis, and gout (elective);

26-Bone and joint infections by focusing on septic arthritis, acute and chronic osteomyelitis, spinal cord tuberculosis and hand infections;

27-Amputation;

28-Side effects of fractures and dislocations by focusing on the compartment syndrome, thrombosis, and depth veins and fatty emboli;

C. Specialized Orthopedic Examinations:

29-Examining the spinal cord (including SLR- Straight Leg Raising);

30-Examinations of hip (including Ortolani and Barlow tests);

31-Knee (ligaments, meniscus, liquid existence), knee liquids especially in terms of liquid existence;

32-Foot and ankle examination techniques;

33-Should examination techniques;

34-Elbow examination techniques;

35-Wrist, hand and fingers examination techniques;

36-Studying the limbs in terms of bleeding (examining the peripheral impulses and capillary refill);

37-Nervous examinations of limbs (nervous roots and peripheral nerves), describing the lesions of peripheral nerves;

Secretariat of general medical education council may change the list of common symptoms and signs, important syndromes and diseases, and necessary procedures in this section in necessary time intervals if required and according to the priorities at discretion and coordination of board of general medicine and faculties of medicine.

Clinical Clerkship of Urology (Genitourinary Tract)

Urology Clerkship
Urology (Genitourinary Tract Diseases)

Orthopedics Clerkship

Code : 202
Presentation: Clerkship
Prerequisite: Internal Diseases Clerkship, General Surgery Clerkship
Type of Course: Obligatory, 2 Weeks, 1.5 Credits

Total Goals:

1-Connecting with patients, personnel and other health team members in a good manner, and showing specifications of good professional behavior in a suitable communication;

2-Obtaining medical history of patients suffering from common and important symptoms and complaints related to this section (attached list), performing necessary physical examinations, discussing important differential diagnoses, and suggesting the patient problem management and diagnosis;

3-Diagnosing the problems of common and important diseases patients related to this section (attached list), justify and make suggestion on the preventive, treatment, reference and rehabilitation actions, and also patient education in a level expected from the general practitioners based on the scientific evidence and local guidelines, and cooperate in patient problem management based on the standards of the section under supervision of upper ranks (according to the section regulations);

4-Performing the essential procedures related to this section (attached list) by observing the patients safety principles under appropriate supervision of higher ranks (according to the section regulations);

Description: in this course, students shall meet the defined goals by presence in clinical rounds, training clinics and performing the personal and group assignments. Required theoretical training classes shall be held to provide theoretical knowledge.

Educational Activities: learning activities of this section shall involve a harmonic combination of training on patient's bed, personal study and group discussion, presenting the disease cases, performing practical procedures under supervision of professor, and participating in educational sessions of group.
Schedule and composition of such activities and required fields for each activity including the hospital, clinic, health services centers, laboratory, emergency, Skill Lab. clinical skills learning center, are determined by each faculty of medicine in Clinical Study Guide according to the standards notified by secretariat of general medical education council.

Necessary Content: according to the different conditions of education in different faculties, it is necessary that the learning guides are determined by faculty of medicine according to the deed of capabilities expected from graduates of general doctorate degree and with regard to the standards notified by secretariat of general medical education council, Ministry of Health and Medical Education, and delivered to the learners. The mentioned skills, main diagnostic and Para clinical methods and necessary drugs the student shall acquire sufficient knowledge on shall be specified in each clinical study guide.
The classes shall be presented in a way that they focus and deny the student's presence beside the patient and his/her clinical practices.
It is necessary for the educational department to determine, notify and execute the educational methods and program and student evaluation based on the scientific principles. Faculty of medicine confirms the program, supervision on execution and evaluation of program.
Supervision may be applied for the higher levels (interns, residents, fellowships, professors) and other relevant members of health team in order to ensure the patients' rights and safety considerations meet the learning goals of students. Faculty of medicine is responsible for determining the method of good supervision on each procedure or intervention.

Urology

Code: 203
Prerequisite: Urology Clinical Clerkship
Type of Course: Elective, 2-4 Weeks, 2-4 Credits

Total Goals:

1-Cooperating with personnel and other health team members in a good manner;

2-Indicating specifications of good professional behavior in communications in a good manner, and indicating the commitment, skillfulness, and self-confidence necessary for performing the professional responsibilities especially under different clinical conditions;

3-Obtaining medical history of patients suffering from common and important symptoms and complaints related to this section (attached list), performing necessary physical examinations, discussing important differential diagnoses, and suggesting the patient problem management and diagnosis;

4-Diagnosing the problems of common and important diseases patients related to this section (attached list), justify and make suggestion on the preventive, treatment, reference and rehabilitation actions, and also patient education in a level expected from the general practitioners based on the scientific evidence and local guidelines, and cooperate in patient problem management based on the standards

of the section under supervision of upper ranks (according to the section regulations);

5-Performing the essential procedures related to this section (attached list) by observing the patients safety principles under appropriate supervision of higher ranks (according to the section regulations);

Description: In this course, students shall acquire necessary capabilities for performing independent services related to this section in general medicine according to the capabilities expected from general practitioners by cooperation in presenting health services in the related fields (hospital, clinic, health services centers, etc.), attending the specified educational sessions, and personal study;

Educational Activities: Schedule and composition of such activities and required fields for each activity including the hospital, clinic, health services centers, laboratory, emergency, Skill Lab. clinical skills learning center, are determined by each faculty of medicine in Clinical Study Guide according to the standards notified by secretariat of general medical education council.

Necessary Content: according to the different conditions of education in different faculties and sections, it is necessary that the learning guides are determined by faculty of medicine according to the deed of capabilities expected from graduates of general doctorate degree.

The classes shall be presented in a way that they focus and deny the student's presence beside the patient and his/her clinical practices. Type and amount of duties and services assigned to interns in each clinical rotation shall be according to the educational goals of section, not disturbing the learning of necessary expected skills.

At least one third of interns training time shall be allocated to clinical education.

Supervision may be applied for the higher levels (interns, fellowships, professors) and other relevant members of health team in order to ensure the patients' rights and safety considerations meet the learning goals of students. Faculty of medicine is responsible for determining the method of good supervision on each procedure or intervention.

Common Symptoms and Complaints:

1-Pains of genitourinary system (pains in kidney, radicular, ureter, bladder, prostate, penis and scrotal);

2-Stimulation symptoms (frequency, nacturia, dysuria, emergency sense);

3-Obstructive signs (reducing urine pressure, urine drop, regular urination, and pressure;

4-Sexual disorder in men (reducing the sexual distinguishing, sexual disability, non-ejaculation, lack of orgasm, premature ejaculation);

5-Urinary retention;

6-Urinary incontinence;

7-Enuresis;

8-Hematospermia;
9-Pneumaturia;
10-Tract secretion;
11-Fever;

Important Syndromes and Diseases:

Must Know:

1-Urinary stones;
2-Common kidney and bladder tumors;
3-Common anomalies of genitourinary system;
4-Traumas of urinary system and its management;
5-Neurogenic bladder;
6-Benign prostate hyperplasia;
7-Prostate cancer;
8-Genitourinary diseases: stenosis, anomalies including hypospadias and epispadiasis;
9-Acute testicle problems (infection, torsion, trauma);

Better to Know:

1-Testicle anomalies (Cryptorchidism, varicose);
2-Testicle tumors;

During this rotation, the common diagnostic methods and tests shall have application in clinical activity of general practitioner, and request and interpretation of results of such tests and methods in common urologic diseases and disorders.

During this rotation, common drugs to be used in clinical activity of general practitioner, and writing prescription in common urologic disorders and diseases are trained.

During this course, it is necessary to learn and practice the safety considerations of patients.

Necessary Procedures:

1-Performing simple dresses;
2-Performing the complicated dresses with simple debriman (partnership);
3-Assembling and disassembling the bladder catheter;
4-Suprapubic puncture;
5-Performing the special urology examinations;
6-Circumcision (preferably);

Secretariat of general medical education council may change the list of common symptoms and signs, important syndromes and diseases, and necessary procedures in this section in necessary time intervals if required and according to the priorities at discretion and coordination of board of general medicine and faculties of medicine.

Urology (Genitourinary Tract Diseases)

Code: 204
Presentation: Clerkship
Prerequisite: -
Type of Course: Theoretical (17 hours)

Total Goals: According to the attached list,
A. Facing each common and important symptoms and complaints:
1- Describing the definition;
2- Describing focused history taking and physical exam;
3- Discussing important differential diagnoses, and suggesting necessary steps for reaching the patient problem diagnosis and management;

B. On common and important diseases:
1- Explaining the definition, etiology and epidemiology of disease;
2- Explaining the problems of patients suffering from the important common diseases;
3- Describing the patient diagnosis methods;
4- Explaining the most important preventive proceedings in different levels including the patient treatment and rehabilitation based on the scientific evidence and local guidelines to the extent expected from general practitioner;
5- Using the knowledge learnt for clinical reasoning and recommendation of diagnostic or medical approaches in facing the scenario or describing the patients related to such diseases;

C. Paying attention to the important issues to be necessarily observed in clinical environment of this field;
Description: meeting the specific goals through attending the class, clinical skill learning center (skill laboratory), training workshop and performing the personal and group assignments;

Educational Activities: learning activities of this course include the harmonic composition of theoretical education, personal study and group discussion, and performing other learning assignments.

Schedule and composition of such activities and required fields for each activity including the class, Skill Lab., clinical sites, are determined by each faculty of medicine in study guide according to the standards notified by secretariat of general medical education council.

Necessary Content: According to the different conditions of clinical education in different faculties, it is necessary that the learning guides are determined by faculty of medicine according to the deed of capabilities expected from graduates of general

doctorate degree and with regard to the standards notified by secretariat of general medical education council, Ministry of Health and Medical Education, and delivered to the learners.
The amount and time of presenting the theoretical classes shall not fail the clinical learning of students.
It is necessary for the educational department to determine, notify and execute the educational methods and program and student evaluation based on the scientific principles. Faculty of medicine confirms the program, supervision on execution and evaluation of program.

Syllabus:
A. Treatment of Common Symptoms and Complaints in Urology:

1-Pains of genitourinary system (pains in kidney, radicular, ureter, bladder, prostate, penis and scrotal);

2-Urination disorders (stimulus and obstructive symptoms in urinary tract, retention, incontinence, and enuresis;

3-Sexual disorder in men (reducing the sexual distinguishing, sexual disability, non-ejaculation, lack of orgasm, premature ejaculation);

B. Common and Important Diseases:

4-Urinary stones;

5-Common kidney and bladder tumors;

6-Common anomalies of genitourinary system;

7-Neurogenic bladder;

8-Common prostate diseases: benign hyperplasia of prostate, prostate cancer;

9-Urinary tract diseases: stenosis, anomalies (including hypospadias and hypospadias and epispadiasis;

10-Urinary system traumas and its management;

11-Acute testicle problems (infection, torsion, trauma);

Secretariat of general medical education council may change the list of common symptoms and signs, important syndromes and diseases, and necessary procedures in this section in necessary time intervals if required and according to the priorities at discretion and coordination of board of general medicine and faculties of medicine.

Anesthesiology Clerkship

Code: 205
Presentation: Clerkship (presented in Clerkship I and II)
Prerequisite: Courses of Clinical Preliminaries
Type of Course: Obligatory, 2 Weeks, 1.5 Credits

Total Goals:

1- Connecting with patients, personnel and other health team members in a good manner, and showing specifications of good professional behavior in a suitable communication;
2- Paying special attention to the specific problems of patients in environments of operation room, recovery and ICU and CCU, especially being skillful in controlling pain as expected by the general practitioner;
3- Performing the determined procedures (attached list) by observing the patients safety principles under appropriate supervision of higher ranks (according to the section regulations);

Description: In this course, students shall meet the defined goals by presence in clinical rounds, operation and recovery rooms, training clinics and performing the personal and group assignments. Required theoretical training classes shall be held to provide theoretical knowledge.

Educational Activities: learning activities of this section shall involve a harmonic combination of training on patient's bed, personal study and group discussion, presenting the disease cases, performing practical procedures under supervision of professor, and participating in educational sessions of group.
Schedule and composition of such activities and required fields for each activity including the hospital, clinic, health services centers, laboratory, emergency, Skill Lab. clinical skills learning center, are determined by each faculty of medicine in Clinical Study Guide according to the standards notified by secretariat of general medical education council.

Necessary Content: according to the different conditions of education in different faculties, it is necessary that the learning guides are determined by faculty of medicine according to the deed of capabilities expected from graduates of general doctorate degree and with regard to the standards notified by secretariat of general medical education council, Ministry of Health and Medical Education, and delivered to the learners. The mentioned skills, main diagnostic and Para clinical methods and necessary drugs the student shall acquire sufficient knowledge on shall be specified in each clinical study guide.

The classes shall be presented in a way that they focus and deny the student's presence beside the patient and his/her clinical practices.
It is necessary for the educational department to determine, notify and execute the educational methods and program and student evaluation based on the scientific principles. Faculty of medicine confirms the program, supervision on execution and evaluation of program.
Supervision may be applied for the higher levels (interns, residents, fellowships, professors) and other relevant members of health team in order to ensure the patients' rights and safety considerations meet the learning goals of students. Faculty of medicine is responsible for determining the method of good supervision on each procedure or intervention.

Necessary Educational Content in Clinical Rotation of Anesthesiology:
Field of Knowledge:

1-An introduction to anesthesia including regional and general, and its branches including palliative medicine and pain;

2-Air way anatomy;

3-Keeping air way open;

4-Pharmacology of sedatives and drugs;

5-Controlling pain after operation (acute) and chronic pains;

6-By principles of mechanical ventilation;

7-Principles of CPR, BLS, ACLS and DNR (Do Not Resuscitate);

8-Introduction to the initial concepts and outcomes of transform and massive transfusion;

Field of Practical Skill (Procedures):

1-Skill of using bag and mask ventilation;

2-Selecting and using oral and nasal airway;

3-Performing laryngoscopy in 1st and 2nd classes' anesthetic patients;

4-Performing tube placing of splinter via oral airway;

5-Performing good venous cannulations from limbs;

6-Active partnership in performing cardiopulmonary resuscitation;

7-Using hemodynamic monitoring equipment;

8-Introductory use of ventilator (preferably);

During this course, it is necessary to learn and practice the safety considerations of patients.

Secretariat of general medical education council may change the mentioned list in necessary time intervals if required and according to the priorities at discretion and coordination of board of general medicine and faculties of medicine.

Clinical Courses of Gynecology and Obstetrics

Gynecology and Obstetrics Clerkship
Theoretical Gynecology and Obstetrics

Gynecology and Obstetrics Clerkship

Code: 206
Presentation: Clerkship I or II
Prerequisite: -
Type of Course: Obligatory, 2 Months (8 Weeks), 6 Credits

Total Goals:

1- Connecting with patients, personnel and other health team members in a good manner, and showing specifications of good professional behavior in a suitable communication;
2- Obtaining medical history of patients suffering from common and important symptoms and complaints related to this section (attached list), performing necessary physical examinations, discussing important differential diagnoses, and suggesting the patient problem management and diagnosis;
3- Diagnosing the problems of common and important diseases patients related to this section (attached list), justify and make suggestion on the preventive, treatment, reference and rehabilitation actions, and also patient education in a level expected from the general practitioners based on the scientific evidence and local guidelines, and cooperate in patient problem management based on the standards of the section under supervision of upper ranks (according to the section regulations);
4- Performing the essential procedures related to this section (attached list) by observing the patients safety principles under appropriate supervision of higher ranks (according to the section regulations);

Description: in this course, students shall meet the defined goals by presence in clinical rounds, training clinics and performing the personal and group assignments. Required theoretical training classes shall be held to provide theoretical knowledge.

Educational Activities: learning activities of this section shall involve a harmonic combination of training on patient's bed, personal study and group discussion, presenting the disease cases, performing practical procedures under supervision of professor, and participating in educational sessions of group.

Schedule and composition of such activities and required fields for each activity including the hospital, clinic, health services centers, laboratory, emergency, Skill

Lab. clinical skills learning center, are determined by each faculty of medicine in Clinical Study Guide according to the standards notified by secretariat of general medical education council.

Necessary Content: according to the different conditions of education in different faculties, it is necessary that the learning guides are determined by faculty of medicine according to the deed of capabilities expected from graduates of general doctorate degree and with regard to the standards notified by secretariat of general medical education council, Ministry of Health and Medical Education, and delivered to the learners. The mentioned skills, main diagnostic and Para clinical methods and necessary drugs the student shall acquire sufficient knowledge on shall be specified in each clinical study guide.

The classes shall be presented in a way that they focus and deny the student's presence beside the patient and his/her clinical practices.
It is necessary for the educational department to determine, notify and execute the educational methods and program and student evaluation based on the scientific principles. Faculty of medicine confirms the program, supervision on execution and evaluation of program.

Supervision may be applied for the higher levels (interns, residents, fellowships, professors) and other relevant members of health team in order to ensure the patients' rights and safety considerations meet the learning goals of students. Faculty of medicine is responsible for determining the method of good supervision on each procedure or intervention.

Gynecology and Obstetrics

Code: 208
Presentation: Clerkship
Prerequisite: -
Type of Course: Theoretical (68 hours)

Total Goals: according to the attached list,
A. Facing each common and important symptoms and complaints:
1-Describing the definition;
2-Describing focused history taking and physical exam;
3-Discussing important differential diagnoses, and suggesting necessary steps for reaching the patient problem diagnosis and management;
B. On common and important diseases:
1-Explaining the definition, etiology and epidemiology of disease;
2-Explaining the problems of patients suffering from the important common diseases;
3-Describing the patient diagnosis methods;

4-Explaining the most important preventive proceedings in different levels including the patient treatment and rehabilitation based on the scientific evidence and local guidelines to the extent expected from general practitioner;

5-Using the knowledge learnt for clinical reasoning and recommendation of diagnostic or medical approaches in facing the scenario or describing the patients related to such diseases;

C. Paying attention to the important issues to be necessarily observed in clinical environment of this field;

Description: meeting the specific goals through attending the class, clinical skill learning center (skill laboratory), training workshop and performing the personal and group assignments;

Educational Activities: learning activities of this course include the harmonic composition of theoretical education, personal study and group discussion, and performing other learning assignments.

Schedule and composition of such activities and required fields for each activity including the class, Skill Lab., clinical sites, are determined by each faculty of medicine in study guide according to the standards notified by secretariat of general medical education council.

Necessary Content : According to the different conditions of clinical education in different faculties, it is necessary that the learning guides are determined by faculty of medicine according to the deed of capabilities expected from graduates of general doctorate degree and with regard to the standards notified by secretariat of general medical education council, Ministry of Health and Medical Education, and delivered to the learners.

The amount and time of presenting the theoretical classes shall not fail the clinical learning of students.
It is necessary for the educational department to determine, notify and execute the educational methods and program and student evaluation based on the scientific principles. Faculty of medicine confirms the program, supervision on execution and evaluation of program.

Syllabus:
A. Midwifery:

1- Preliminaries and definitions in midwifery and gynecology, collecting relationship and moral- religious considerations in midwifery and obstetric examinations;
2- Reviewing the functional anatomy and physiology of genital system;

3- Placenta physiology;
4- Different symptoms and methods of pregnancy diagnosis;
5- Pregnancy examinations and obtaining medical history;
6- Pregnancy physiology;
7- Structure of hip and its abnormal types;
8- Pregnancy cares (including national programs of pre-birth care);
9- Common complaints of pregnancy period;
10- Delivery physiology and developments, and delivery cares;
11- Post-delivery cares (including national program of post-birth cares);
12- Delivery in abnormal representations;
13- Childbirth stimulation;
14- Childbirth dystocia;
15- Embryonic distress and related cares;
16- Premature delivery, pregnancy after term;
17- Intrauterine growth delay;
18- Prolificacy;
19- The 3rd three-month bleeding;
20- Types of placenta and placenta disorders and funiculus;
21- Post- birth side effects (infection, bleeding, thrombophlebitis, breast problems);
22- Blood groups incongruity;
23- Trophoblastic diseases;
24- Physiological childbirth, application of equipment in delivery (vacuum, forceps);
25- Cesarean and its types;
26- Hydroamnios and oligoamnios;
27- Hypertensive diseases in pregnancy;
28- Preterm rupture of membranes;
29- Cardiac diseases and urinary system in pregnancy;
30- Diabetics and pregnancy;
31- Abortion;
32- Extrauterine pregnancy;
33- Neonatal resuscitation;

B. Gynecology:

1-Clinical and Para clinical examinations in gynecology;
2-Maturity and menopause;
3-Dysmenorrhea;
4-Vulva and vaginal diseases;
5-Vaginitis and cervicitis;
6-Benign cervix and uterine diseases;
7-Malign cervix diseases;
8-Malign uterine body and tracts diseases;
9-Benign ovary tumors;

10-Malign ovary tumors;
11-Abnormal women bleeding;
12-Hip infections;
13-Amenorrhea;
14-Infertility;
15-Endometriosis;
16-Congenital disorders in genital system;
17-Pregnancy preventive methods;

Secretariat of general medical education council may change the list of common symptoms and signs, important syndromes and diseases, and necessary procedures in this section in necessary time intervals if required and according to the priorities at discretion and coordination of board of general medicine and faculties of medicine.

Clinical Clerkship of Community and Family Medicine

Community and Family Medicine Clerkship

Code: 209
Presentation: Clerkship (I or II)
Prerequisite: -
Type of Course: Obligatory, 1 Month (4 Weeks), 3 Credits

Total Goals: to meet the capabilities expected from graduates of general medicine,

- Connecting with patients, personnel and other health team members in a good manner, and showing specifications of good professional behavior in a suitable communication;
- Performing the followings by knowing the structure, performance and relation of elements of health system and initial health care:

1- Analyzing, comparing with standards, and reporting the structure of different levels of health care system;
2- Performing the activities of presenting health services for pregnancy, children, mothers, old people, mid-ages, juveniles and young people in the first level of service presentation based on the national instructions under supervision of related trainers;
3- Performing the activities of health education for person, family and community in the first level of service presentation based on the national instructions under supervision of related trainers;
4- Performing the activities of environmental and occupational health in the first level of service presentation based on the national instructions under supervision of related trainers;
5- Performing the activities of oral and dental health in the first level of service presentation based on the national instructions under supervision of related trainers;
6- Performing the activities of school health in the first level of service presentation based on the national instructions under supervision of related trainers;
7- Performing the activities of immunization in the first level of service presentation based on the national instructions under supervision of related trainers;
8- Performing the activities of non-contagious diseases prevention and screening in the first level of service presentation based on the national instructions under supervision of related trainers;
9- Recognizing the electronic health information system and analyzing its results;

10- Using the methods of relationship with target community and social partnership in the first level of services presentation;

Description: in this course, students shall meet the defined goals by presence in health centers and health stations, and performing the personal and group assignments. Required theoretical training classes shall be held by the department of community medicine to provide theoretical knowledge in the form of explanatory workshops.

Educational Activities: learning activities of this section shall involve a harmonic combination of education in the field, personal study and group discussion, presenting the activity report, performing practical skills related to the mentioned goals under supervision of professor, and participating in educational sessions of group.

Schedule and composition of such activities and required fields for each activity including the health centers, and health stations in Clinical Study Guide are determined by each faculty and according to the standards notified by secretariat of general medical education council.

Necessary Content : according to the different conditions of education in different faculties, it is necessary that the learning guides are determined according to the deed of capabilities expected from graduates of general doctorate degree and with regard to the standards notified by secretariat of general medical education council, Ministry of Health and Medical Education, and delivered to the learners. The mentioned skills, the care taking, counselling and educational methods the student shall acquire sufficient knowledge on shall be specified in each clinical study guide.
The classes shall be presented in a way that they focus and deny the student's presence beside the patient and his/her clinical practices.
It is necessary for the educational department to determine, notify and execute the educational methods and program and student evaluation based on the scientific principles. Faculty of medicine confirms the program, supervision on execution and evaluation of program.

Supervision may be applied for the higher levels (residents, fellowships, professors) and other relevant members of health team in order to ensure the patients' rights and safety considerations meet the learning goals of students. Faculty of medicine is responsible for determining the method of good supervision on each procedure or intervention.

Community and Family Medicine

Code: 210
Prerequisite: Community and Family Medicine Clerkship

Type of Course: Obligatory, 1 Month (4 Weeks) (explanatory workshops during the program maximum 5 days, presence in urban sites 70% and rural sites 30% of the program based on the national population distribution), 3 Credits

Total Goals: to meet the capabilities expected from graduates of general medicine,
1-Connecting with patients, personnel and other health team members in a good manner, and showing specifications of good professional behavior in a suitable communication;
2-Evaluating the danger factors management and reduction accurately for success for patients;
3-Criticizing and executing the national health programs accurately in case;
4-Analyzing and prioritizing the most important danger factors and health problems of population and district covered in the educational fields, compiling and presenting the appropriate solutions and necessary operating program according to the available facilities with regard to the cooperation inside and outside the ward;
5-Criticizing the common and prior diseases prevention and screening services in the levels of person, family and society;
6-Executing a plan in the form of analysis, prioritization and problem solving;
7-Calculating and analyzing the health indices based on the work with health electronic system;
8-Suggesting the health indices promotion solutions using the monitoring and evaluation solutions in the district;
9-Obtaining the general, integrated and complete medical history in adults, children, pregnant women and elders in family medicine clinic or general health services centers;
10-Being able to generally and completely physically exam the adults, children (based on the common age classification), pregnant women and elders by observing the privacy of patients and knowing the related legal scope in family medicine clinic or general health services centers;
11-Using the correct principles and approaches of referring to the higher levels;
12-Evaluating the effective social factors on health in person, family and society;
13-Using the methods of multidimensional protection (advocacy) in problem solving;
14-Using the premature diagnostic methods and common diseases screening in person, family and society;
15-Writing the necessary prescriptions based on the principles of reasonable prescription of drugs;

Description: in this course, students shall meet the defined goals by presence in health centers and health stations, and performing the personal and group assignments. Required theoretical training classes shall be held by the department of community and family medicine to provide theoretical knowledge in the form of explanatory workshops.

Suggested Educational Fields:

-General urban, rural and village health services centers;

-Health centers;

-Prevention clinic;

-Family medicine clinic;

-Health centers and municipalities district center (if possible);

-City health center;

-Visiting elders, orphans, prisoners, etc. maintenance centers (if possible);

-Accommodation in rural districts is advised if possible and in case of providing safety and security for students;

Educational Activities: learning activities of this section shall involve a harmonic combination of education in the field, personal study and group discussion, presenting the activity report, performing practical skills related to the mentioned goals under supervision of professor, and participating in educational sessions of group.

Schedule and composition of such activities and required fields for each activity including the health centers, and health stations in Clinical Study Guide are determined by each faculty and according to the standards notified by secretariat of general medical education council.

Necessary Content : according to the different conditions of education in different faculties, it is necessary that the learning guides are determined according to the deed of capabilities expected from graduates of general doctorate degree and with regard to the standards notified by secretariat of general medical education council, Ministry of Health and Medical Education, and delivered to the learners. The mentioned skills, the care taking, counseling and educational methods the student shall acquire sufficient knowledge on shall be specified in each clinical study guide.

The classes shall be presented in a way that they focus and deny the student's presence beside the patient and his/her clinical practices.

It is necessary for the educational department to determine, notify and execute the educational methods and program and student evaluation based on the scientific principles. Faculty of medicine confirms the program, supervision on execution and evaluation of program.

Supervision may be applied for the higher levels (residents, fellowships, professors) and other relevant members of health team in order to ensure the patients' rights and safety considerations meet the learning goals of students. Faculty of medicine is responsible for determining the method of good supervision on each procedure or intervention.

Clinical Courses of Psychiatrics

Psychiatrics Clerkship
Theoretical Psychiatrics

Psychiatrics Clerkship

Code: 211
Presentation: Clerkship (Preferably II)
Prerequisite: -
Type of Course: Obligatory, 1 Month (4 Weeks), 3 Credits

Total Goals:

1- Connecting with patients, personnel and other health team members in a good manner, and showing specifications of good professional behavior in a suitable communication;
2- Obtaining medical history of patients suffering from common and important symptoms and complaints related to this section (attached list), performing necessary physical examinations, discussing important differential diagnoses, and suggesting the patient problem management and diagnosis;
3- Diagnosing the problems of common and important diseases patients related to this section (attached list), justify and make suggestion on the preventive, treatment, reference and rehabilitation actions, and also patient education in a level expected from the general practitioners based on the scientific evidence and local guidelines, and cooperate in patient problem management based on the standards of the section under supervision of upper ranks (according to the section regulations);

Description: in this course, students shall meet the defined goals by presence in clinical rounds, training clinics and performing the personal and group assignments. Required theoretical training classes shall be held to provide theoretical knowledge.

Educational Activities: learning activities of this section shall involve a harmonic combination of training on patient's bed, personal study and group discussion, presenting the disease cases, performing practical procedures under supervision of professor, and participating in educational sessions of group.

Schedule and composition of such activities and required fields for each activity including the hospital, clinic, health services centers, laboratory, emergency, Skill Lab. clinical skills learning center, are determined by each faculty of medicine in Clinical Study Guide according to the standards notified by secretariat of general medical education council.

Necessary Content : according to the different conditions of education in different faculties, it is necessary that the learning guides are determined by faculty of

medicine according to the deed of capabilities expected from graduates of general doctorate degree and with regard to the standards notified by secretariat of general medical education council, Ministry of Health and Medical Education, and delivered to the learners. The mentioned skills, main diagnostic and Para clinical methods and necessary drugs the student shall acquire sufficient knowledge on shall be specified in each clinical study guide.

The classes shall be presented in a way that they focus and deny the student's presence beside the patient and his/her clinical practices.
It is necessary for the educational department to determine, notify and execute the educational methods and program and student evaluation based on the scientific principles. Faculty of medicine confirms the program, supervision on execution and evaluation of program.

Supervision may be applied for the higher levels (interns, residents, fellowships, professors) and other relevant members of health team in order to ensure the patients' rights and safety considerations meet the learning goals of students. Faculty of medicine is responsible for determining the method of good supervision on each procedure or intervention.

Psychiatrics

Code: 213
Presentation: Clerkship
Prerequisite: -
Type of Course: Theoretical (26 hours)

Total Goals: according to the attached list,
A. Facing each common and important symptoms and complaints:
1- Describing the definition;
2- Describing focused history taking and physical exam;
3- Discussing important differential diagnoses, and suggesting necessary steps for reaching the patient problem diagnosis and management;

B. On common and important diseases:
1- Explaining the definition, etiology and epidemiology of disease;
2- Explaining the problems of patients suffering from the important common diseases;
3- Describing the patient diagnosis methods;
4- Explaining the most important preventive proceedings in different levels including the patient treatment and rehabilitation based on the scientific evidence and local guidelines to the extent expected from general practitioner;

5- Using the knowledge learnt for clinical reasoning and recommendation of diagnostic or medical approaches in facing the scenario or describing the patients related to such diseases;

C. Paying attention to the important issues to be necessarily observed in clinical environment of this field;

Description: meeting the specific goals through attending the class, clinical skill learning center (skill laboratory), training workshop and performing the personal and group assignments;

Educational Activities: learning activities of this course include the harmonic composition of theoretical education, personal study and group discussion, and performing other learning assignments.
Schedule and composition of such activities and required fields for each activity including the class, Skill Lab., clinical sites, are determined by each faculty of medicine in study guide according to the standards notified by secretariat of general medical education council.

Necessary Content: According to the different conditions of clinical education in different faculties, it is necessary that the learning guides are determined by faculty of medicine according to the deed of capabilities expected from graduates of general doctorate degree and with regard to the standards notified by secretariat of general medical education council, Ministry of Health and Medical Education, and delivered to the learners.

The amount and time of presenting the theoretical classes shall not fail the clinical learning of students.
It is necessary for the educational department to determine, notify and execute the educational methods and program and student evaluation based on the scientific principles. Faculty of medicine confirms the program, supervision on execution and evaluation of program.

Syllabus:

1- Anxiety disorders (dispersed anxiety disorder, fear disorder, panic disorders, post- accident stress disorder, anxiety disorder arisen from addiction, and from physical diseases);
2- Mood disorders (main depression, mood and bipolar depression, mourn, compatibility disorder, pre-menstruation, depression and psychosis disorder after delivery, addiction mood disorder, physical diseases mood disorder;
3- Psychotic disorders (schizophrenia, other psychotic disorders, delirium disorder, Brief Psychotic Disorder, psychotic disorders arisen from addiction and physical diseases, such as tumors and metabolic diseases;

4- Addiction (recognizing common drugs, addiction signs, addiction and giving up signs);
5- Sexual disorders (natural cycle, functional disorders);
6- Sleeping disorders;
7- Physical disorders in psychiatric diseases;
8- Psychiatric issues in physical diseases and psychomotor disorders;
9- Somatoform disorders (physical, transforming, body deforming and hypochondriasis);
10- Mental disorders;
11- Cognitive disorders (dementia, delirium);
12- Elders psychiatric disorders;
13- Psychiatry emergency (murdering, killing, evaluating the danger factors);
14- Common psychiatric disorders in child and juvenile (hyperactivity, carelessness, sadism and conduct disorder, tic disorder, depression, anxiety, urinary and stool incontinence, mental retardation);
15- Medicinal and non-medicinal treatments in psychiatry;

Secretariat of general medical education council may change the list of this section in necessary time intervals if required and according to the priorities at discretion and coordination of board of general medicine and faculties of medicine.

Clinical Courses of Emergency Medicine

Emergency Medicine Clerkship

Code: 214
Presentation: Clerkship (Better Presented in Clerkship II)
Prerequisite: Courses of Clinical Preliminaries
Type of Course: Obligatory, 2 Weeks, 1.5 Credits

Total Goals:

1- Connecting with patients, personnel and other health team members in a good manner, and showing specifications of good professional behavior in a suitable communication;
2- Obtaining medical history of patients suffering from common and important symptoms and complaints related to this section (attached list), performing necessary physical examinations, discussing important differential diagnoses, and suggesting the patient problem management and diagnosis;
3- Performing the necessary procedures (attached list) by observing the principles of patient safety under good supervision of higher ranks (according to the regulations of related section);

Description: in this training course, students shall attend the patient's bed with medical team (professors, residents and interns), and meet the specified goals by performing the personal and group assignments. The required theoretical training classes are held for providing the theoretical knowledge. Training sessions may include the participation in the morning report, practical training workshops of skills.
Educational Activities: learning activities of this section shall involve a harmonic combination of training on patient's bed, personal study and group discussion, presenting the disease cases, performing practical procedures under supervision of professor, and participating in educational sessions of group.

Schedule and composition of such activities and required fields for each activity including the hospital, clinic, health services centers, laboratory, emergency, Skill Lab. clinical skills learning center, are determined by each faculty of medicine in Clinical Study Guide according to the standards notified by secretariat of general medical education council.

Necessary Content: according to the different conditions of education in different faculties, it is necessary that the learning guides are determined by faculty of medicine according to the deed of capabilities expected from graduates of general doctorate degree and with regard to the standards notified by secretariat of general medical education council, Ministry of Health and Medical Education, and delivered to the learners. The mentioned skills, main diagnostic and Para clinical methods and

necessary drugs the student shall acquire sufficient knowledge on shall be specified in each clinical study guide.

The classes shall be presented in a way that they focus and deny the student's presence beside the patient and his/her clinical practices.
It is necessary for the educational department to determine, notify and execute the educational methods and program and student evaluation based on the scientific principles. Faculty of medicine confirms the program, supervision on execution and evaluation of program.

Supervision may be applied for the higher levels (residents, fellowships, professors) and other relevant members of health team in order to ensure the patients' rights and safety considerations meet the learning goals of students. Faculty of medicine is responsible for determining the method of good supervision on each procedure or intervention.

Common Symptoms and Complaints:

1-Cardiopulmonary failure;
2-Multiple trauma;
3-Chest pain;
4-Stomach ache;
5-Asthma;
6-Weakness and phlegm;
7-Reducing the consciousness;
8-Common neurological signs: headache, vertigo and convulsion;

Necessary Procedures:

1- Performing and practicing the patient's standard triage under normal conditions based on the protocol (including classification/ category and determining the patient's requirement);
2- Basic maneuvers of administering the airway and using the oral airway equipment;
3- Basic cardiopulmonary resuscitation (BLS) including cardiac massage, CPR, mask respiration, Heimlich maneuver and AED;
4- ECG and cardiopulmonary monitoring;
5- Straining;
6- Introduction to necessary equipment for bladder Catheterization and nasogastric tube;
7- Muscular, venous and subcutaneous injections;
8- Lesion care (washing, dressing, types of lesion and equipment required for treatment);
9- Primary trauma care;

Secretariat of general medical education council may change the list of common symptoms and signs, important syndromes and diseases, and necessary procedures in this section in necessary time intervals if required and according to the priorities at discretion and coordination of board of general medicine and faculties of medicine.

Radiology Clerkship

Code: 216
Presentation: Clerkship
Prerequisite: -
Type of Course: Obligatory, 1 Month (4 Weeks), 3 Credits

Total Goals:

1- Connecting with patients, personnel and other health team members in a good manner, and showing specifications of good professional behavior in a suitable communication;
2- Acquiring sufficient knowledge on important radiological images of different limbs and body systems (attached list);
3- Optimally selecting and requesting for important radiological images in common cases based on the radiology indications in terms of diagnostic value, costs spent, radiation to patient and field of activity of general practitioner;
4- Using imaging and radiology as a scientific method for diagnosis and treatment of patient especially the prior and after consultations rather than as a professional skill means;
5- Imaging and recognizing the normal cases and natural variations in important common graphs (attached list) in order to avoid additional diagnostic- therapeutic actions;
6- Diagnosing immediately the important imaging findings in common emergency cases;
7- Adjusting the important items of imaging reports (specialists and radiology ward) with available findings in clichés;
8- Matching the available important findings in clichés and radiology report items with clinical findings of patient, and cooperating in the problem management steps of patient based on the ward standards under supervision of higher ranks (according to the section regulations);
9- Recognizing the simple radiological procedures;

Description: in this course, students shall acquire sufficient knowledge on principles, techniques and applications of radiology, normal anatomy in imaging the chest, stomach, gastrointestinal system and urinary system, central nervous system, spinal chest and skeletal system, using the different imaging modalities for each section mentioned on common and emergency lesions, disorders and damages in radiology to adjust the important findings in clichés and items related in radiology report with the clinical findings of patient. The required theoretical training classes will be held to provide the theoretical knowledge.

Educational Activities: learning activities of this section shall involve a harmonic combination of education on bed, providing the patient before imaging, cliché reading sessions and participating in educational sessions of group.
Schedule and composition of such activities and required fields for each activity including the health centers, and health stations in Clinical Study Guide are determined by each faculty and according to the standards notified by secretariat of general medical education council.

Necessary Content : according to the different conditions of education in different faculties, it is necessary that the learning guides are determined according to the deed of capabilities expected from graduates of general doctorate degree and with regard to the standards notified by secretariat of general medical education council, Ministry of Health and Medical Education, and delivered to the learners.
The classes shall be presented in a way that they focus and deny the student's presence beside the patient and his/her clinical practices.

It is necessary for the educational department to determine, notify and execute the educational methods and program and student evaluation based on the scientific principles. Faculty of medicine confirms the program, supervision on execution and evaluation of program.

Important Radiological Imaging of Different Body Organs and Systems:

1- Imaging the gastrointestinal system- hollow viscus (including normal appearance of analysis with barium, normal CT Scan, introduction to CT Colonography, common lesions and approach to each disease);
2- Imaging bone, joints and soft tissues (common diseases and approach to each disease);
3- Imaging bone, joints and soft tissues (simple cliché, CT Scan, and MRI);
4- Imaging the common head and neck diseases and approach to each disease;
5- Imaging the urinary system (normal sonography, normal IVP, normal CT scan, common diseases and approach);
6- Breast imaging (including system, normal mammography, special Views, Birads system, and approach to each Birads, the role of sonography in MRI);
7- Imaging women and midwifery (including sonography, normal CT and MRI, normal histro- Salphenography, common lesions and approach to each disease, indications of request of transvaginal sonography);
8- Mediastina and cardiovascular imaging (including CXR, CT Scan, normal MRI, diseases and approach to each disease);
9- Children imaging;

During this rotation, the common diagnostic images with application in clinical activity of general practitioner, and request and interpretation of results of such tests and methods in common nervous diseases and disorders are trained.

During this course, it is necessary to learn and practice the safety considerations of patients.

Modalities and Important Types of Radiological Imaging:
Minimum learning items in each radiology modalities:
-Simple radiography, cases to be seen:
•Chest X-Ray: PA, lateral and decubitus;
•Abdominal X-Ray: erect and supine;
•Skull X-Ray: AP, lateral and occipitomental;
•Spine X-Ray: AP and lateral;
•Extremities: lower and upper limbs;
-Fluoroscopy: studies with contract agent, cases to be seen:
•Gastrointestinal system: Barium Swallow, Barium follow through, Barium enema;
•Genitourinary system: intravenous venography, micturating cystourethrogram;
-Sonography, cases to be seen:
•Liver and biliary tracts;
•Pancreas;
•Spleen;
•Kidney and bladder;
•Uterus and ovaries;
-CT Scan, cases to be seen:
•Chest: at least 3 thorax CT Scans with indication and different protocols;
•Stomach and hip: at least 3 abdominal and hip CT scans with indication and different protocols;
•Brain: at least 3 brain CT Scans with different diagnoses;
•CT Angiography: limb, mesenteric, heart;

At the beginning of each main subject of rotation, it is necessary to review the anatomy of each section by focusing on the clinical application within scope of duties of general practitioner.
Writing the radiological request in common cases having application in clinical activity of general practitioner is trained.

Theoretical Syllabus:

1- Introduction to types of radiology methods and radiography techniques;
2- Radiobiology and radiation protection;
3- Introduction to types of contrast agents used in radiology;
4- Radiological semiology and indications of using types of radiological methods in skeletal diseases and trauma;
5- -Natural graph of chest (positions, simple image indication, CT Scan and other chest imaging methods);
6- Radiological semiology and introduction to chest diseases (mediastina, pleura, parenchymal diseases, infectious diseases, tumor pulmonary);

7- Simple abdominal radiology and indication of different imaging methods in gastrointestinal system analysis;
8- Introduction to gastrointestinal system diseases and acute stomach;
9- Introduction to genitourinary system diseases and indication of different imaging methods in system analysis;
10- Children imaging;
11- Introduction to preparatory actions for performing the imaging studies such as studies using edible and injective contrast agents, sonography, CT Scan, MRI and Nuclear Medicine;
12- Introduction to probable side effects of different imaging actions;
13- Introduction to types of contrast agent and common drugs used in imaging, indications, prohibitions and side effects of contrast agents;
14- Introduction to radiology advantages and limitations in diseases diagnosis and treatment;
15- Introduction to side effects of ionizing radiations on human including pregnancy and different methods against radiation;

Secretariat of general medical education council may change the list of subjects, and necessary procedures in this section in necessary time intervals if required and according to the priorities at discretion and coordination of board of general medicine and faculties of medicine.

Clinical Courses of Infectious Diseases

Infectious Diseases Clerkship
Theoretical Infectious Diseases

Infectious Diseases Clerkship

Code: 217
Presentation: Clerkship II
Prerequisite: Courses of Clinical Preliminaries
Type of Course: Obligatory, 1 Month (4 Weeks), 3 Credits

Total Goals:

1- Connecting with patients, personnel and other health team members in a good manner, and showing specifications of good professional behavior in a suitable communication;
2- Obtaining medical history of patients suffering from common and important symptoms and complaints related to this section (attached list), performing necessary physical examinations, discussing important differential diagnoses, and suggesting the patient problem management and diagnosis;
3- Diagnosing the problems of common and important diseases patients related to this section (attached list), justifying and making suggestion on the preventive, treatment, reference and rehabilitation actions, and also patient education in a level expected from the general practitioners based on the scientific evidence and local guidelines, and cooperate in patient problem management based on the standards of the section under supervision of upper ranks (according to the section regulations);
4- Performing the essential procedures related to this section (attached list) by observing the patients safety principles under appropriate supervision of higher ranks (according to the section regulations);

Description: in this course, students shall meet the defined goals by presence in clinical rounds, training clinics and performing the personal and group assignments. Required theoretical training classes shall be held to provide theoretical knowledge.

Educational Activities: learning activities of this section shall involve a harmonic combination of training on patient's bed, personal study and group discussion, presenting the disease cases, performing practical procedures under supervision of professor, and participating in educational sessions of group.

Schedule and composition of such activities and required fields for each activity including the hospital, clinic, health services centers, laboratory, emergency, Skill Lab. clinical skills learning center, are determined by each faculty of medicine in

Clinical Study Guide according to the standards notified by secretariat of general medical education council.

Necessary Content: according to the different conditions of education in different faculties, it is necessary that the learning guides are determined by faculty of medicine according to the deed of capabilities expected from graduates of general doctorate degree and with regard to the standards notified by secretariat of general medical education council, Ministry of Health and Medical Education, and delivered to the learners. The mentioned skills, main diagnostic and Para clinical methods and necessary drugs the student shall acquire sufficient knowledge on shall be specified in each clinical study guide.

The classes shall be presented in a way that they focus and deny the student's presence beside the patient and his/her clinical practices.
It is necessary for the educational department to determine, notify and execute the educational methods and program and student evaluation based on the scientific principles. Faculty of medicine confirms the program, supervision on execution and evaluation of program.

Supervision may be applied for the higher levels (interns, residents, fellowships, professors) and other relevant members of health team in order to ensure the patients' rights and safety considerations meet the learning goals of students. Faculty of medicine is responsible for determining the method of good supervision on each procedure or intervention.

Infectious Diseases

Code: 219
Presentation: Clerkship
Prerequisite: -
Type of Course: Theoretical (34 hours)

Total Goals: according to the attached list,
A. Facing each common and important symptoms and complaints:
1- Describing the definition;
2- Describing focused history taking and physical exam;
3- Discussing important differential diagnoses, and suggesting necessary steps for reaching the patient problem diagnosis and management;

B. On common and important diseases:
1- Explaining the definition, etiology and epidemiology of disease;
2- Explaining the problems of patients suffering from the important common diseases;
3- Describing the patient diagnosis methods;

4- Explaining the most important preventive proceedings in different levels including the patient treatment and rehabilitation based on the scientific evidence and local guidelines to the extent expected from general practitioner;
5- Using the knowledge learnt for clinical reasoning and recommendation of diagnostic or medical approaches in facing the scenario or describing the patients related to such diseases;

C. Paying attention to the important issues to be necessarily observed in clinical environment of this field;

Description: meeting the specific goals through attending the class, clinical skill learning center (skill laboratory), training workshop and performing the personal and group assignments;

Educational Activities: learning activities of this course include the harmonic composition of theoretical education, personal study and group discussion, and performing other learning assignments.

Schedule and composition of such activities and required fields for each activity including the class, Skill Lab., clinical sites, are determined by each faculty of medicine in study guide according to the standards notified by secretariat of general medical education council.

Necessary Content : According to the different conditions of clinical education in different faculties, it is necessary that the learning guides are determined by faculty of medicine according to the deed of capabilities expected from graduates of general doctorate degree and with regard to the standards notified by secretariat of general medical education council, Ministry of Health and Medical Education, and delivered to the learners.

The amount and time of presenting the theoretical classes shall not fail the clinical learning of students.

It is necessary for the educational department to determine, notify and execute the educational methods and program and student evaluation based on the scientific principles. Faculty of medicine confirms the program, supervision on execution and evaluation of program.

Syllabus:

1-Common symptoms and complaints in infectious diseases;

2-Common Bacterial Diseases: streptococci infections (pharyngitis streptococci, rheumatism fever), staphylococci infections (abscess, pneumonias,

folliculate and Golgi), meningitis, otitis, cynosite, tuberculosis, brucellosis, typhoid, shigellosis, cholera, cellulite, orchitis, urinary infections, pneumonia, sepsis and septic shock syndrome, acute food poisoning, sexual diseases;

3-Common Viral Diseases: catching cold, flu, chicken pox, zona, herpes, HIV, hepatitis;

4-Common Parasitic Diseases: malaria, sedative cyst, parasitic intestinal diseases, gull, pedicolosis;

5-Controlling infections in health and medical centers and hospitals;

6-Reasonable prescription of antibiotics;

This course shall be presented in a way to pay attention to the national protocols and epidemiology of infectious diseases in Iran and district.

Secretariat of general medical education council may change the list of this section in necessary time intervals if required and according to the priorities at discretion and coordination of board of general medicine and faculties of medicine.

Clinical Courses of Neurology

Neurology Clerkship
Theoretical Neurology

Neurology Clerkship

Code: 220
Presentation: Clerkship (Preferably Clerkship II)
Prerequisite: Internal Medicine Clerkship (2 Months), Pediatrics Clerkship (2 Months), General Surgery Clerkship
Type of Course: Obligatory, 1 Month (4 Weeks), 3 Credits

Total Goals:

1- Connecting with patients, personnel and other health team members in a good manner, and showing specifications of good professional behavior in a suitable communication;
2- Obtaining medical history of patients suffering from common and important symptoms and complaints related to this section (attached list), performing necessary physical examinations, discussing important differential diagnoses, and suggesting the patient problem management and diagnosis;
3- Diagnosing the problems of common and important diseases patients related to this section (attached list), justifying and making suggestion on the preventive, treatment, reference and rehabilitation actions, and also patient education in a level expected from the general practitioners based on the scientific evidence and local guidelines, and cooperate in patient problem management based on the standards of the section under supervision of upper ranks (according to the section regulations);
4- Performing the essential procedures related to this section (attached list) by observing the patients safety principles under appropriate supervision of higher ranks (according to the section regulations);

Description: in this course, students shall meet the defined goals by presence in clinical rounds, training clinics and performing the personal and group assignments. Required theoretical training classes shall be held to provide theoretical knowledge.

Educational Activities: learning activities of this section shall involve a harmonic combination of training on patient's bed, personal study and group discussion, presenting the disease cases, performing practical procedures under supervision of professor, and participating in educational sessions of group.
Schedule and composition of such activities and required fields for each activity including the hospital, clinic, health services centers, laboratory, emergency, Skill Lab. clinical skills learning center, are determined by each faculty of medicine in

Clinical Study Guide according to the standards notified by secretariat of general medical education council.

Necessary Content : according to the different conditions of education in different faculties, it is necessary that the learning guides are determined by faculty of medicine according to the deed of capabilities expected from graduates of general doctorate degree and with regard to the standards notified by secretariat of general medical education council, Ministry of Health and Medical Education, and delivered to the learners. The mentioned skills, main diagnostic and paraclinical methods and necessary drugs the student shall acquire sufficient knowledge on shall be specified in each clinical study guide.

The classes shall be presented in a way that they focus and deny the student's presence beside the patient and his/her clinical practices.
It is necessary for the educational department to determine, notify and execute the educational methods and program and student evaluation based on the scientific principles. Faculty of medicine confirms the program, supervision on execution and evaluation of program.

Supervision may be applied for the higher levels (interns, residents, fellowships, professors) and other relevant members of health team in order to ensure the patients' rights and safety considerations meet the learning goals of students. Faculty of medicine is responsible for determining the method of good supervision on each procedure or intervention.

Neurology

Code: 222
Presentation: Clerkship
Prerequisite: -
Type of Course: Theoretical (25 hours)

Total Goals: according to the attached list,
A. Facing each common and important symptoms and complaints:

1-Describing the definition;
2-Describing focused history taking and physical exam;
3-Discussing important differential diagnoses, and suggesting necessary steps for reaching the patient problem diagnosis and management;
B. On common and important diseases:

1. Explaining the definition, etiology and epidemiology of disease;
2. Explaining the problems of patients suffering from the important common diseases;
3. Describing the patient diagnosis methods;

4- Explaining the most important preventive proceedings in different levels including the patient treatment and rehabilitation based on the scientific evidence and local guidelines to the extent expected from general practitioner;
5- Using the knowledge learnt for clinical reasoning and recommendation of diagnostic or medical approaches in facing the scenario or describing the patients related to such diseases;

C. Paying attention to the important issues to be necessarily observed in clinical environment of this field;

Description: meeting the specific goals through attending the class, clinical skill learning center (skill laboratory), training workshop and performing the personal and group assignments;
Educational Activities: learning activities of this course include the harmonic composition of theoretical education, personal study and group discussion, and performing other learning assignments.
Schedule and composition of such activities and required fields for each activity including the class, Skill Lab., clinical sites, are determined by each faculty of medicine in study guide according to the standards notified by secretariat of general medical education council.

Necessary Content : According to the different conditions of clinical education in different faculties, it is necessary that the learning guides are determined by faculty of medicine according to the deed of capabilities expected from graduates of general doctorate degree and with regard to the standards notified by secretariat of general medical education council, Ministry of Health and Medical Education, and delivered to the learners.

The amount and time of presenting the theoretical classes shall not fail the clinical learning of students.

It is necessary for the educational department to determine, notify and execute the educational methods and program and student evaluation based on the scientific principles. Faculty of medicine confirms the program, supervision on execution and evaluation of program.

Syllabus:

1-Treatment of neurological diseases;
2-Stroke (medical and diagnostic method);
3-Convulsion and epilepsy (principles of diagnosis, treatment and pursuit);
4-Headache diseases (migraine, tension, cluster);
5-Cognitive and dementia disorders;

6-Myopathies and disorders of nerve and muscle connection point;

4. Neuropathy and kinetic neuron diseases;
5. Introduction to sleeping diseases (apnea, hypersomnia, insomnia, narcolepsies, parasomnia);
6. Infections of central nervous system (meningitis, encephalitis, abscess);
7. MS and other anti-myelin diseases of central nervous system;
8. Motor disorders (Parkinson, Chorea Athetosis, dystonia, myoclonus);
9. Introduction to paraclinical actions (laboratory, imaging, electrophysiology and Lumbar puncture) in nervous diseases (necessity of application, physiology, technique and interpretation);
10. Neurological side effects of internal diseases;
11. Treatment of less-consciousness patient (coma and brain death);

Secretariat of general medical education council may change the list of common symptoms and signs, important syndromes and diseases and necessary procedures of this section in necessary time intervals if required and according to the priorities at discretion and coordination of board of general medicine and faculties of medicine.

Clinical Courses of Dermatology

Dermatology Clerkship

Code: 223
Presentation: Clerkship
Prerequisite: Clerkship
Type of Course: Obligatory, 1 Month (4 Weeks), 3 Credits

Total Goals:

1. Connecting with patients, personnel and other health team members in a good manner, and showing specifications of good professional behavior in a suitable communication;
2. Obtaining medical history of patients suffering from common and important symptoms and complaints related to this section (attached list), performing necessary physical examinations, discussing important differential diagnoses, and suggesting the patient problem management and diagnosis;
3. Diagnosing the problems of common and important diseases patients related to this section (attached list), justifying and making suggestion on the preventive, treatment, reference and rehabilitation actions, and also patient education in a level expected from the general practitioners based on the scientific evidence and local guidelines, and cooperate in patient problem management based on the standards of the section under supervision of upper ranks (according to the section regulations);
4. Performing the essential procedures related to this section (attached list) by observing the patients safety principles under appropriate supervision of higher ranks (according to the section regulations);

Description: in this course, students shall meet the defined goals by presence in clinical rounds, training clinics and performing the personal and group assignments. Required theoretical training classes shall be held to provide theoretical knowledge.

Educational Activities: learning activities of this section shall involve a harmonic combination of training on patient's bed, personal study and group discussion, presenting the disease cases, performing practical procedures under supervision of professor, and participating in educational sessions of group.

Schedule and composition of such activities and required fields for each activity including the hospital, clinic, health services centers, laboratory, emergency, Skill Lab. clinical skills learning center, are determined by each faculty of medicine in

Clinical Study Guide according to the standards notified by secretariat of general medical education council.
Necessary Content: the students of General Medicine are advised to mainly attend the clinics, general wards and emergency for 60-70% of clinical education.

According to the different conditions of education in different faculties, it is necessary that the learning guides are determined by faculty of medicine according to the deed of capabilities expected from graduates of general doctorate degree and with regard to the standards notified by secretariat of general medical education council, Ministry of Health and Medical Education, and delivered to the learners. The mentioned skills, main diagnostic and paraclinical methods and necessary drugs the student shall acquire sufficient knowledge on shall be specified in each clinical study guide.

The classes shall be presented in a way that they focus and deny the student's presence beside the patient and his/her clinical practices.
It is necessary for the educational department to determine, notify and execute the educational methods and program and student evaluation based on the scientific principles. Faculty of medicine confirms the program, supervision on execution and evaluation of program.

Supervision may be applied for the higher levels (interns, residents, fellowships, professors) and other relevant members of health team in order to ensure the patients' rights and safety considerations meet the learning goals of students. Faculty of medicine is responsible for determining the method of good supervision on each procedure or intervention.

Ophthalmology Clerkship

Code: 225
Presentation: Clerkship (Clerkship II)
Prerequisite: Internal Diseases, Surgical Diseases and Pediatrics Clerkship
Type of Course: Obligatory, 2 Weeks, 1.5 Credits

Total Goals:

1. Connecting with patients, personnel and other health team members in a good manner, and showing specifications of good professional behavior in a suitable communication;
2. Obtaining medical history of patients suffering from common and important symptoms and complaints related to this section (attached list), performing necessary physical examinations, discussing important differential diagnoses, and suggesting the patient problem management and diagnosis;
3. Diagnosing the problems of common and important diseases patients related to this section (attached list), justifying and making suggestion on the preventive, treatment, reference and rehabilitation actions, and also patient education in a level expected from the general practitioners based on the scientific evidence and local guidelines, and cooperate in patient problem management based on the standards of the section under supervision of upper ranks (according to the section regulations);
4. Performing the essential procedures related to this section (attached list) by observing the patients safety principles under appropriate supervision of higher ranks (according to the section regulations);

Description: in this course, students shall meet the defined goals by presence in clinical rounds, training clinics and performing the personal and group assignments. Required theoretical training classes shall be held to provide theoretical knowledge.

Educational Activities: learning activities of this section shall involve a harmonic combination of training on patient's bed, personal study and group discussion, presenting the disease cases, performing practical procedures under supervision of professor, and participating in educational sessions of group.
Schedule and composition of such activities and required fields for each activity including the hospital, clinic, health services centers, laboratory, emergency, Skill Lab. clinical skills learning center, are determined by each faculty of medicine in Clinical Study Guide according to the standards notified by secretariat of general medical education council.

Necessary Content : According to the different conditions of education in different faculties, it is necessary that the learning guides are determined by faculty of

medicine according to the deed of capabilities expected from graduates of general doctorate degree and with regard to the standards notified by secretariat of general medical education council, Ministry of Health and Medical Education, and delivered to the learners. The mentioned skills, main diagnostic and paraclinical methods and necessary drugs the student shall acquire sufficient knowledge on shall be specified in each clinical study guide.

The classes shall be presented in a way that they focus and deny the student's presence beside the patient and his/her clinical practices.
It is necessary for the educational department to determine, notify and execute the educational methods and program and student evaluation based on the scientific principles. Faculty of medicine confirms the program, supervision on execution and evaluation of program.

Supervision may be applied for the higher levels (interns, residents, fellowships, professors) and other relevant members of health team in order to ensure the patients' rights and safety considerations meet the learning goals of students. Faculty of medicine is responsible for determining the method of good supervision on each procedure or intervention.

ENT Diseases Clerkship

Code: 227
Presentation: Clerkship (Clerkship II)
Prerequisite: Internal Diseases, General Surgery and Pediatrics Clerkship
Type of Course: Obligatory, 1 Month (4 Weeks), 3 Credits

Total Goals:

1-Connecting with patients, personnel and other health team members in a good manner, and showing specifications of good professional behavior in a suitable communication;

2-Obtaining medical history of patients suffering from common and important symptoms and complaints related to this section (attached list), performing necessary physical examinations, discussing important differential diagnoses, and suggesting the patient problem management and diagnosis;

3-Diagnosing the problems of common and important diseases patients related to this section (attached list), justifying and making suggestion on the preventive, treatment, reference and rehabilitation actions, and also patient education in a level expected from the general practitioners based on the scientific evidence and local guidelines, and cooperate in patient problem management based on the standards of the section under supervision of upper ranks (according to the section regulations);

4-Performing the essential procedures related to this section (attached list) by observing the patients safety principles under appropriate supervision of higher ranks (according to the section regulations);

Description: in this course, students shall meet the defined goals by presence in clinical rounds, training clinics and performing the personal and group assignments. Required theoretical training classes shall be held to provide theoretical knowledge.

Educational Activities: learning activities of this section shall involve a harmonic combination of training on patient's bed, personal study and group discussion, presenting the disease cases, performing practical procedures under supervision of professor, and participating in educational sessions of group.
Schedule and composition of such activities and required fields for each activity including the hospital, clinic, health services centers, laboratory, emergency, Skill Lab. clinical skills learning center, are determined by each faculty of medicine in Clinical Study Guide according to the standards notified by secretariat of general medical education council.

Necessary Content : According to the different conditions of education in different faculties, it is necessary that the learning guides are determined by faculty of medicine according to the deed of capabilities expected from graduates of general

doctorate degree and with regard to the standards notified by secretariat of general medical education council, Ministry of Health and Medical Education, and delivered to the learners. The mentioned skills, main diagnostic and paraclinical methods and necessary drugs the student shall acquire sufficient knowledge on shall be specified in each clinical study guide.

The classes shall be presented in a way that they focus and deny the student's presence beside the patient and his/her clinical practices.
It is necessary for the educational department to determine, notify and execute the educational methods and program and student evaluation based on the scientific principles. Faculty of medicine confirms the program, supervision on execution and evaluation of program.

Supervision may be applied for the higher levels (interns, residents, fellowships, professors) and other relevant members of health team in order to ensure the patients' rights and safety considerations meet the learning goals of students. Faculty of medicine is responsible for determining the method of good supervision on each procedure or intervention.

Medical Ethics

Code: 229
Presentation: Clerkship (Preferably in First Months of Clerkship)
Prerequisite: -
Type of Course: Theoretical (2 Credits, 34 hours), Total (2 Credits, 34 hours)

Total Goals:
Knowledge Goals:

- Recognizing the human and ethical aspects of medicine;
- Being informed of total expectations of Islamic teachings and medical jurisprudence of a qualified physician;
- Being able to recognize the subjects of medical ethics in his profession;
- Obtaining the knowledge infrastructure to take moral decisions in medicine;
- Being informed of his obligations as a physician;

Skill Goals:

- Connecting good relationship with patients based on the rules of medical ethics;
- Making the moral decision in his profession;
- Attracting cooperation and partnership of patients/ his family in decision making;
- Having correct interaction with other colleagues in the field of health;
- Performing his obligations as a physician;

Viewpoint Goals:

- Paying special attention to the human dignity of patients;
- Considering the commitment, responsibilities, fair and justice in presenting the health services;
- Considering the priority of patient's interests on personal benefits as a physician;
- Honoring the patients' rights;
- Considering the cultural and religious dimensions;

Description: in this course, the subjects of medical ethics are presented in the functional form by observing the necessary details in education so that moral teachings are expected to lead the change of professional behavior and view of physicians. It is advised to use the interactive methods for present the course in order to supply the student’s partnership in the best way.

Necessary Content:

- Introduction, history and expression of importance of medical ethics;
- Medical ethics in Islam and moral theories;
- Professional commitment;

- 4 principles and moral analysis means;
- Relationship of physician and patient, physician and society, physician and colleagues;
- Appearance rules, privacy;
- Confidentiality and telling truth;
- Autonomy and aware satisfaction;
- Patient's rights and satisfaction;
- Ethics in education;
- Ethics in research;
- Contract of interests in education, research and health services presentation;
- Ethics in health system (including resources allocation element);
- Medical errors and physician's responsibility;
- Moral considerations of presenting services under critical conditions;
- Telling bad news;
- Moral considerations at the beginning of life;
- Moral considerations at the end of life;
- Introduction to medical law and regulations;
- Modern technologies (including use of stem cells) and issues mentioned in medicine, medical jurisprudence;

Remarks: -

Forensic Medicine and Poisonings

Code: 230
Presentation: Clerkship
Prerequisite: -
Type of Course: Theoretical (2 Credits, 34 hours), Total (2 Credits, 34 hours)

Total Goals:
Cognitive Goals:

- Introduction to the legal rules and requirements related to total legal issues of medicine in the general medicine;
- Introduction to the laws and regulations of medicine including issuing certificates such as general earned and rest certificate, death report, obligatory diseases report, prescription, obligatory bed, virginity upon the personal request);
- Introduction to the legal aspects of satisfaction, immunity and medical errors;
- Knowing the punishments of giving unreal certificate;
- Introduction to medical cases of referring to forensic medicine;

Viewpoint Goals:

- Undertaking the medical professional obligations and using them in medicine;
- Introduction to the affidavit and guidelines of forensic medicine and observing them in medicine;
- Observing the professional regulations and duties assigned by workplace institute or health system;
- Being responsible for the supervisory authorities of health system;

Skill Goals:

- Observing the legal rules and requirements upon general examination and special cases (trauma, identification, suffocations, sexual problems and poisoning);
- Analyzing and taking good decision on medical issues of patients and their families according to the legal rules and requirements;

Description: this course is designed and executed for familiarity of interns with issues of forensic medicine and capability in their precise observation in medicine within framework of scientific, practical and professional qualifications of general practitioner by observing the regulations mentioned in this program. The students' view to observing the legal regulations and requirements is expected to be promoted by mentioning the real examples and functional cases.

Necessary Content :

- Generalities of forensic medicine;

- Moral principles, laws and regulations of medicine;
- Deathology, writing death report and issuing the funeral permission;
- Determining identification and human remains and effects;
- Suffocations;
- Sexual issues;
- Traumatology: generalities and fighting, accidents and events, heating and cooling, radiations and electricity, noise;
- Poisonings;
- Sexual issues in forensic medicine, sexual deviation and related legal issues;
- Weapons;
- Pregnancy, abortion and kidding;
- Sudden normal death;
- Child abuse and neonatal death;
- Legal principles of writing certificate and file;
- Letter of consent and indulgence;
- Blood money law (based on the Islamic punishments law book);